American
FORESTS
NOVEMBER, 1958 50 CENTS

Waters Davis

CRUSADING TEXAN

See Page 6

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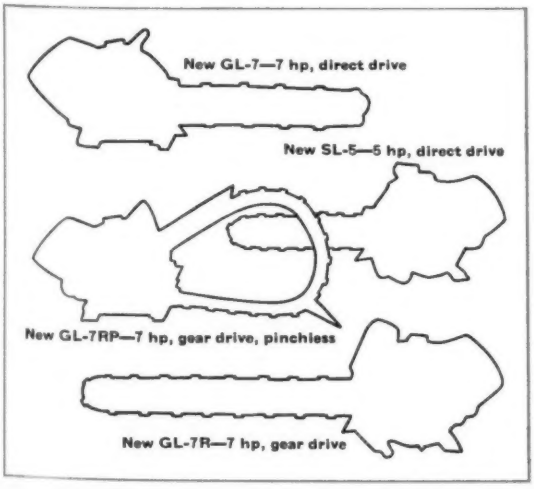

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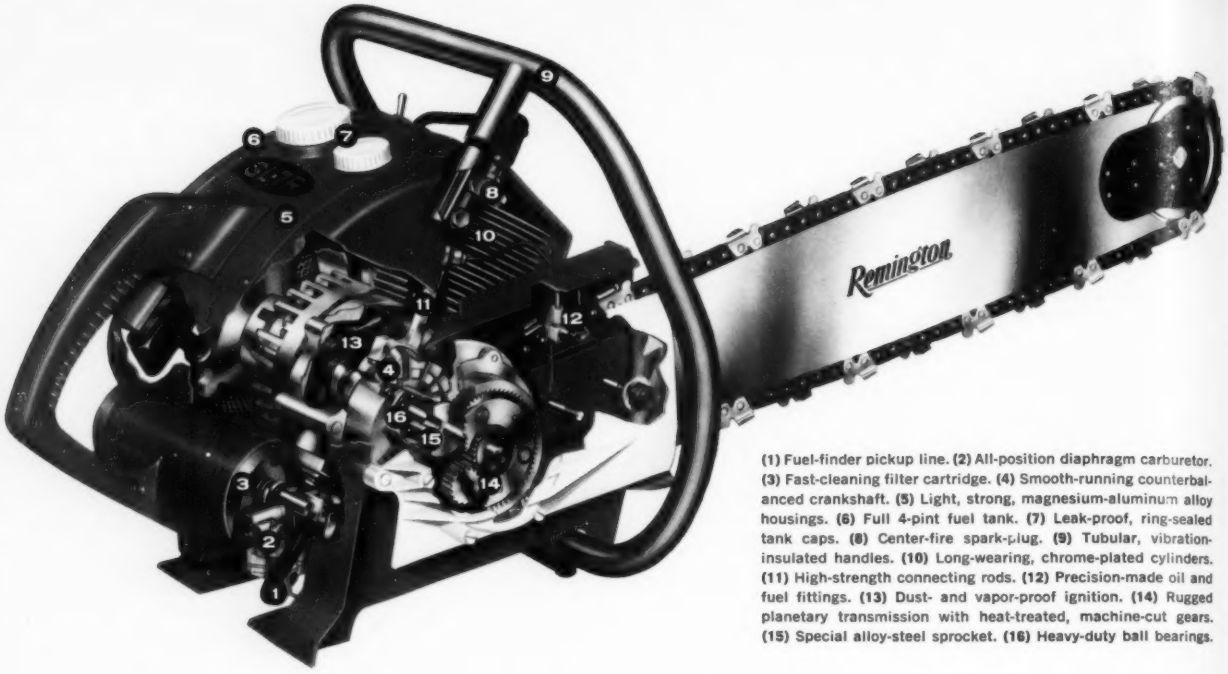

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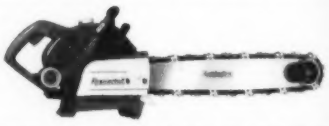

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American FORESTS

PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION

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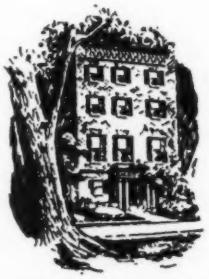
Volume 64, No. 11 | *November, 1958*

CONTENTS

COVER • *Waters Davis of League City, Texas, was general chairman of the Fifth National Watershed Congress in Dallas last month. (See article on page 6.)*



The AFA

The American Forestry Association, publishers of *American Forests,* is a national organization — independent and non-political in character — for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

AMERICAN FORESTS is published monthly by The American Forestry Association at 919 Seventeenth Street, N. W., Washington 6, D. C. Subscription price $6 a year. Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. The Editors are not responsible for views expressed in signed articles. Entered as second-class matter at the Post Office at Washington, D. C., under the Act of March 3, 1879. Accepted for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918. Additional entry at Baltimore, Md., December 29, 1931.

Forest Forum

"Saw his Duty . . ."

EDITOR:

In the rush to give credit where credit is due on the successful solution to the problems raised by the 1954 Klamath Termination Act, one name has been largely overlooked.

The man who stood like a rock in spite of considerable pressure on this whole business from the start was Mr. Thomas B. Watters, management specialist for the Klamath tribe, who was appointed under the 1954 Act. Mr. Watters was aided in great measure by technical advice from the management specialist forester, Earle Wilcox, but the original decision to propose a change in the Act was made by Mr. Watters.

Tom Watters and two other men were appointed management specialists by Secretary of the Interior McKay. One of the men resigned to engage in a political campaign and the other suffered from poor health which finally caused his resignation.

Tom Watters, more than any other man, is responsible for awakening a number of people to the inherent dangers to the Reservation and to the Indians in the 1954 Act. In spite of opposition from the lumber industry, from factions of the tribe, and from others, Watters kept straight ahead on the only path which was right.

I am sure that those in Washington intimately familiar with the whole problem and with the long efforts to reach a successful conclusion—such as Dick Neuberger and Hatfield Chilson—will agree with me that had it not been for Tom Watters' perceptiveness, his willingness to take a stand which he knew would be unpopular with many of his friends, and his plain guts, the Klamath Indian Reservation would have gone down the drain.

So, when we begin to list Neuberger, Chilson, Seaton, Metcalf, and others to whom credit must go in this long and finally successful fight, please be sure not to leave off the name of Thomas B. Watters, a businessman from Klamath Falls, Oregon, with little previous knowledge of either timber or Indians, who "saw his duty and done it."

Robert W. Chandler
Editor, *Bend Bulletin*
Bend, Oregon

An Object Lesson from the Philippines

EDITOR:

Professionally trained foresters employed by the Philippine Forest Service, in 1948, organized The Society of Filipino Foresters, whose aims and ideals are similar to those of The Society of American Foresters. The Philippine Forest Service has, among its other activities, secured the establishment and reservation of an extensive system of national parks, whose care and management fell within the scope and responsibility of the Forest Service, instead of in a separate bureau.

Thus it happened that the decisions on policy as to care and management of the forests within these national parks devolved upon the technically-trained Filipinos who were in charge of the remaining commercial forests.

This body of experts was unhampered by the existence of sentiment, such as has been so outspoken in the United States, seeking to enforce a policy of complete neglect of such forests, and of letting the destructive forces of nature play havoc with the timber, through depredations of insects and disease. The job of these foresters, as they conceived it, was to protect and preserve the health and beauty of the forests. So they formulated a policy, which reads: *(Filipino Forestry 1957-58,* page 37)

"Tree cutting in the Parks should be under a selective cutting management plan so that the trees should be left untouched along the streams and roadsides for protection, shade, scenic and aesthetic effects which are enjoyed by many people. They are also used as cover and food of wildlife. Cutting of timber in National Parks should be allowed only when the trees could be removed without injury or disfigurement of the landscape; when the thinning of the forest or cutting of the vista will improve the service features of the parks or where the destruction of trees is necessary to eliminate insect infestations or diseases common to forestry and shrub."

H. H. Chapman
New Haven, Conn.

Klamath Timber Sales

Editor:

With respect to the Klamath Indian land sale bill, the title forfeiture or reversion provision will, I believe, prevent lenders from considering real estate loans on the land.

I thought you would want to know this.

R. E. Huff
Manager, Timber Loans
Farm Loan Service
The Equitable Life Assurance Society
of the United States
New York 1, N. Y.

Roadside Planting for Wildlife

Editor:

The editorial in the November, 1957 issue of *American Forests* refers to a resolution passed by the Board of Directors of The American Forestry Association calling for a two-fisted action program and necessary enabling legislation to plant trees, shrubs and wildlife thickets along the roads built under the new highway act. Accent on fast-growing trees of a bushy variety would be given priority by the board.

I wish to respectfully call to the attention of the board that this resolution is incongruous in at least one respect. Until we have developed effective measures to keep wildlife off the expressways and turnpikes, we merely increase the toll of wild creatures when we build their habitat along these arteries of transportation. Signs, "Give Wildlife a Brake" and "Caution, Deer Crossing," are not enough to deter automobile and truck traffic from taking a heavy toll of birds and animals as these vehicles race along at speeds which exceed limits prescribed by state laws.

On a 4,000-mile trip we made in the fall of 1957 on the Pennsylvania-Ohio-Indiana Turnpike to Fort Wayne, then south through Indianapolis, Vincennes, Indiana; Cape Girardeau, Poplar Bluff, Missouri; Pocahontas, Russellville, Arkansas; returning via Memphis, Nashville, Tennessee; Berea, Winchester, Maysville, Kentucky; Columbus, Ohio; Wheeling, West Virginia; Uniontown, Pennsylvania; and Cumberland, Maryland, to Washington, D. C., an attempt was made to observe highway areas at least ten miles in extent free of killed wild birds and animals. We found none along main highways and few along secondary roads.

We drove again over a part of this route in the spring of 1958, west on Route 40 to Columbus, Ohio, thence north and west over country and state roads to Route 30 and Fort Wayne, Indiana, returning to Washington, D. C., via the Ohio-Pennsylvania Turnpike and Maryland national routes 40 and 240. On both these trips we noted where speeding vehicles had destroyed numerous songbirds, quail, pheasants, doves, skunk, civet, opossum, raccoon, groundhogs, rabbits, and squirrels along the entire route. What a sad spectacle for young children to see on their vacation travels!

It is regretted that no solution or alternate plan can be suggested. Perhaps we need first to arouse the interest of our nation's civic leaders in waging a vigorous campaign in behalf of saving our wildlife. We need to offer scholarships in hopes that some brilliant young scientist can develop a sonic vibration to prevent wild creatures from crossing our highways. We need to develop underpass runways where the need for animal crossings exists. Until these are functioning, we err in urging legislation which will provide planted areas and encourage breeding and nesting for wildlife along the express highway environment where wanton slaughter occurs 24 hours a day. Such legislation leads to "zooicide." Let us not overlook the fact that in certain areas and during certain seasons many wild creatures seek the absorbed warmth of the paved highways at night when atmospheric temperatures drop. We know too little about their habits at present to prevent possible extinction of some species.

John and Miriam Kuenzel
4913 Tuckerman Street
Riverdale, Maryland

"You Can't Push Nature Around..."

SEVEN hundred members of The American Forestry Association were expected to converge on Tucson, Arizona, October 27-30 for their first Southwest meeting, and to explore proposals emanating from that state to drastically alter forest cover in an effort to increase water flows.

Keynoter is to be Dr. Richard E. McArdle, Chief, Forest Service, Department of Agriculture, whose theme will be that "you can't push nature around."

Deforestation as a tool of watershed conservation represented a new idea to 31,000 AFA members when it was first presented in an article by Dr. Joseph Wood Krutch, author and naturalist, in the April, 1957, issue of *American Forests*. Since most of Arizona's watersheds are on public lands, principally national forests, interested inquiries regarding the proposal were received from every state in the Union.

The interest generated in the new management "tool" was a major reason for scheduling the 83rd annual meeting in the Southwest, in an effort to give the association an opportunity to examine all sides of the proposition. A full report will be presented in the next issue of our magazine after the convention has examined both sides of the coin.

AFA's Conservation Caravan, an all-association train with five pullmans, lounge and dining cars, and a special mail car, was scheduled to leave Chicago October 23 led by Smokey, the fire preventin' bear. Orders for a special Forest Conservation Stamp to be released at Tucson by the Post Office Department will be taken at scheduled stops of the train from school children. The stamp commemorates the centennial of the birth of President Theodore Roosevelt. Another feature will be the exhibition at Tucson by Chief McArdle of the famous pen "TR" used when he founded the national forests. The pen has never before left the Department of Agriculture.

Yet another feature will be the dedication of the desert watershed management exhibit at the famous Desert Museum, established outside of Tucson by the Pack Forestry Foundation.

PESTICIDES, BLESSING OR CURSE?

By IRA N. GABRIELSON

President, Wildlife Management Institute

ONE of the more alarming elements of agricultural progress since the end of World War II, from the standpoint of the wildlife administrator, has been the phenomenal growth in number, potency, and use of chemical pesticides. Before the last world-wide conflict, agricultural pesticides were relatively simple, safe to use, and applied too sparingly to present more than local threats to fish and wildlife resources. The most lethal substances commonly employed were some of the arsenic derivatives, which here and there were responsible for the loss of desirable fish and game where deer or rabbits foraged upon treated foliage or when rains washed the substances into streams or lakes.

Since the war, however, there have been four major developments that have caused increasing alarm among those interested in wildlife. First in importance was the development of the chlorinated hydrocarbon insecticides, with DDT as a comparatively feeble progenitor of a powerful new family of chemicals to which already has been added a second new family of equally potent organic phosphates. Practically all of these new chemicals are toxic to wildlife and fish; some retain their toxicity for months and years in soil or water; and even normal "safe" doses can be built up to lethal levels by repeated spraying of the same area.

The second post-war development was the increase in the production of crop spraying aircraft, an outgrowth of the reconnaissance and strafing aircraft of the war; and third was the discharge of thousands of war-trained pilots skilled in the operation of such aircraft. It was only natural for many of these young men to capitalize on their training and apply their talents to agricultural aerial spraying. Hundreds of such enterprises sprang up, ranging from a single pilot with a war-surplus Piper Cub offering his services to local farmers, to large corporations with entire fleets of aircraft especially designed for crop spraying. The crop-dusting aircraft today is as much a part of the agricultural scene in the cottonfields of the Southeast and the wheatlands of the West as are the tractor and combine.

Use of Chemicals Increases

A fourth development has been the entrance of governmental agencies into the insect control picture on a broad scale. Regional control programs in cooperation with the states have been carried on for many years by the Department of Agriculture for the control of gypsy moths and other insect pests, but this activity has been increased and expanded within recent years. The most recent extension has been the familiar but still unassessed and alarming attack on the imported fire ant in the Southeast.

As a result of these developments, the broadcast use of chemicals, more powerful and potentially more dangerous than any ever used before, has increased phenomenally. In 1957, 130 million pounds of the chlorinated carbons alone were broadcast on the croplands and forests of America. Production of insecticides has increased sevenfold since 1942, and the chemical industry is continuing to expand its annual production of these toxicants.

Even though these chemicals may be a most effective method of attacking insect pests and protecting the farmer against crop damage, the vacationist against insect stings, and the timber crop against borers and weevils, what are the indirect biological costs to the public? What will be the long-term effects upon the ecology of the treated areas? What will be the impact of these tons of chemicals upon fish and wildlife and the recreation that depends upon them? What will be the effects upon the many beneficial insects and invertebrates which form the food base of many of our game species? Unfortunately, no one at the present time can answer these questions or many others with any degree of clarity.

All too little research has been conducted to date. Even among the biologists and entomologists there is disagreement, even on such basic problems as the effect of the fire ant on agriculture and the actual need for its control. A small amount of research has been done by the states and by the Fish and Wildlife Service on the biological impact of mass insecticide treatment. Research done by the chemical companies themselves has been confined largely to studies of the effects upon the human system and upon those of domesticated livestock, in order to determine safe limits of application.

Report from Alabama

Much of the information that we have to date on the direct effects of aerial blanket spraying of dieldrin and heptachlor on wildlife comes from Alabama, where much of the recent fire ant eradication program has been centered. This information, with the scraps available from other states, is far from encouraging. In a study conducted by the Alabama Cooperative Wildlife Research Unit, a beaver pond within the area treated by the Department of Agriculture for fire ant control was studied intensively last spring. The area was sprayed on March 25-28. Between those dates and April 21, 175 dead fish were picked up on the shores of the pond. Brown thrashers, common before the spraying, were not found there after treatment. Rabbits were killed off, but were found to be making a recovery at the time of the report on May 23. Frogs were found to be still dying when the report was made. Twenty-five separate species of birds and mammals were found dead on the area between the dates of spraying and the release of the report.

On an upland area of 4,100 acres in Alabama similarly treated last spring by the Department of Agriculture for fire ant eradication, 87 per cent of the quail were killed. Doves were reported dropping dead. A fox den on the area was found contain-

ing 13 foxes, five of which died in convulsions after being removed, and a dead housecat was found on the area. The total number of birds and mammals found dead on this area was 300.

In Louisiana, a similar study was conducted on an area treated with DDT, a much milder toxicant than dieldrin or heptachlor. Louisiana is the most important woodcock wintering ground in the United States, and an important waterfowl wintering area. Earthworms on a control area were decreased severely by treatment, and nearly all domestic ducks in one community were killed. Losses to song bird nests were heavy.

North Dakota Reports

In North Dakota, losses to waterfowl after spraying of grainfields with dieldrin last year were found to be heavy and lasted 24 days. Dieldrin sprayed for the control of riceleaf miners caused heavy local losses of birds in California, while in the same state the treatment of orchards with dieldrin at the comparatively low rate of one-half to one and one-half pounds per acre killed cottontail rabbits, jackrabbits, and mice. In eastern Texas field workers noted heavy losses among quail, song birds, and fish after treatment.

Fish are extremely susceptible to many of the new pesticides, and toxaphene has been used experimentally in removing the fish from overpopulated ponds. But DDT, considered one of the "safer" of the new chemicals, has been directly responsible for the most spectacular fish-kills reported to date. In Montana, between 1953 and 1955, extensive aerial spraying to control spruce budworms was conducted on the Helena and Nez Perce National Forests and Yellowstone Park. Biologists of the Montana Fish and Game Department observed heavy fish mortality throughout the drainages of the area. Six hundred whitefish, brown trout, and suckers were found dead on one 250-yard stretch of the Yellowstone River. In some streams fish populations were reduced by about 84 per cent below pre-spraying levels.

On the Miramichi and Dungarvon Rivers in New Brunswick, spraying operations, in which DDT was distributed at one-half pound per acre, were found by fishery biologists to kill up to 80 percent of young salmon caged for observation in the streams. The kill of fingerlings was almost complete in the sprayed area, and two-year-old fish were reduced to two-thirds of their previous abundance. The mortality continued for four months after the spraying operations ceased. Canadian fishery biologists are predicting greatly-reduced return of adults to these rivers from the age classes affected by the spray program. In both instances, aquatic insect life was nearly obliterated over broad areas.

On the Trinity River in Texas, dieldrin spraying on adjacent lands effected a complete kill of the fish on two lakes of 12 and 37 acres, when rain washed the poisons into the water.

These are only a few of the many examples of direct killing of valuable fish and wildlife through the application of chemical pesticides. Many other losses undoubtedly have occurred which were not observed by qualified biologists or naturalists and which, therefore, have never been reported.

What Are Cumulative Effects?

Spectacular though these direct kills may be, however, what concerns the biologists most is not the direct but the cumulative and indirect effects of these spraying operations. Dieldrin, toxaphene, DDT, and the other chlorinated hydrocarbons are extremely stable, retaining their toxicity for long periods of time. In slightly acid water, for instance, toxaphene may maintain its potency to kill fish for years, as found by research workers in Texas. When an area is sprayed once at rates of application sublethal to fish and wildlife, a certain proportion of the chemical is washed into the soil and stored there. When the area is resprayed, the residue continues to build up after each application, and although any single spraying may not be directly toxic to higher forms, some crops are sprayed several times during each growing season. Lethal doses of chemicals gradually build up in the soil, eventually to be washed by rains into water courses or to be picked up with grit and food by birds.

Similarly, the food supplies of insectivorous birds are destroyed or contaminated. Workers in Louisiana are investigating losses of woodcock on the wintering grounds of this species attributed to their eating earthworms contaminated by dieldrin applied in the fire ant control program. In the contamination of the Miramichi and Yellowstone drainages previously referred to, the loss to aquatic insects was found to be nearly complete.

Beneficial insects—scavengers, pollinators and predators on pests—also are heavily killed by aerial spraying. Mollusks are particularly susceptible to killing by the chlorinated hydrocarbons. The result of heavy and continual application of these chemicals can only be a complete upsetting of traditional and natural predator-prey relationships, and the possible extirpation of desirable forms over large areas.

Another factor is the development of strains of lower forms of insects immune to standard spray doses. This has already been noted in Florida, where DDT application at low intensity for mosquito control at first appeared to be almost completely effective. Later it was found that a DDT-tolerant strain had evolved, and that even heavy dosages of the poison failed to have an appreciable effect. While this might appear to offset the fear that beneficial insects will be destroyed over wide areas, the answer of the spraying contractors is usually a massive application of a much more potent chemical.

Dangers to Human Life?

Last but not least are the dangers to human life. There have been numerous deaths attributed to carelessness in handling such poisons, and medical men are becoming increasingly concerned about their indirect effect on man. One doctor has stated that he attributes the increase in certain blood diseases to these chemicals, and the discovery of a new lung disease has just been announced. The discoverers cite among other possible causes these new insecticides.

These are some of the problems and case histories. What can we do about them? The chemical companies are meeting a public demand, and some of the larger firms are making efforts to minimize threats to wildlife. The major problem lies with the user, whether commercial contractor, governmental agency, or individual farmer. One of the most important steps would be the establishment of the closest possible working relationships between the fish and game agency and the agency or agencies within each state working on or interested in insect control. In some states this already has been achieved, but in others the liaison between the two points of interest is thin or virtually nonexistent. Work could well be started in each state to interest the public health agencies and extension service personnel in alerting the users of pesticides to their potential dangers and to minimize hazards of accident, human judgment, or carelessness.

Ira N. Gabrielson

The enactment of the pesticides research law in the closing hours of Congress and the appropriation of $125,000 to the Fish and Wildlife Service to study the effects of pesticides on fish and game resources will provide many of the facts now needed on these new chemicals and their use. But the federal government cannot do the work alone. I urge every fish and game administrator to throw the full available resources of his department behind the effort to gather facts on this critical problem and to make their findings available without delay to the Patuxent Wildlife Research Refuge in Laurel, Maryland, whose personnel will give any assistance it can in conducting such studies.

Here are some of the things the investigator should determine in studying local applications of chemical pesticides:

1. Pre- and post-application populations of birds and animals on an area sprayed, or comparative censuses on the area after spraying and on a comparable check area of the same size, far enough removed from the study area to be immune to effects of the spray.
2. The pesticide used, obtaining this information directly from the label on the container, where possible.
3. The dosage; the amount of actual pesticide applied per acre; how much water, oil, or other carrier was added to the pesticide.
4. Method of application, type of equipment used, and the uniformity of coverage.
5. Time and frequency of application.
6. Weather conditions, wind velocities and direction, and precipitation — before, during, and after application.
7. Gross effects on birds and other life, looking for any unusual behavior, changes in population numbers, ages and sex ratios. Information should be obtained where possible as to whether effects are from direct contact with the chemical or were caused by

(*Turn to page* 40)

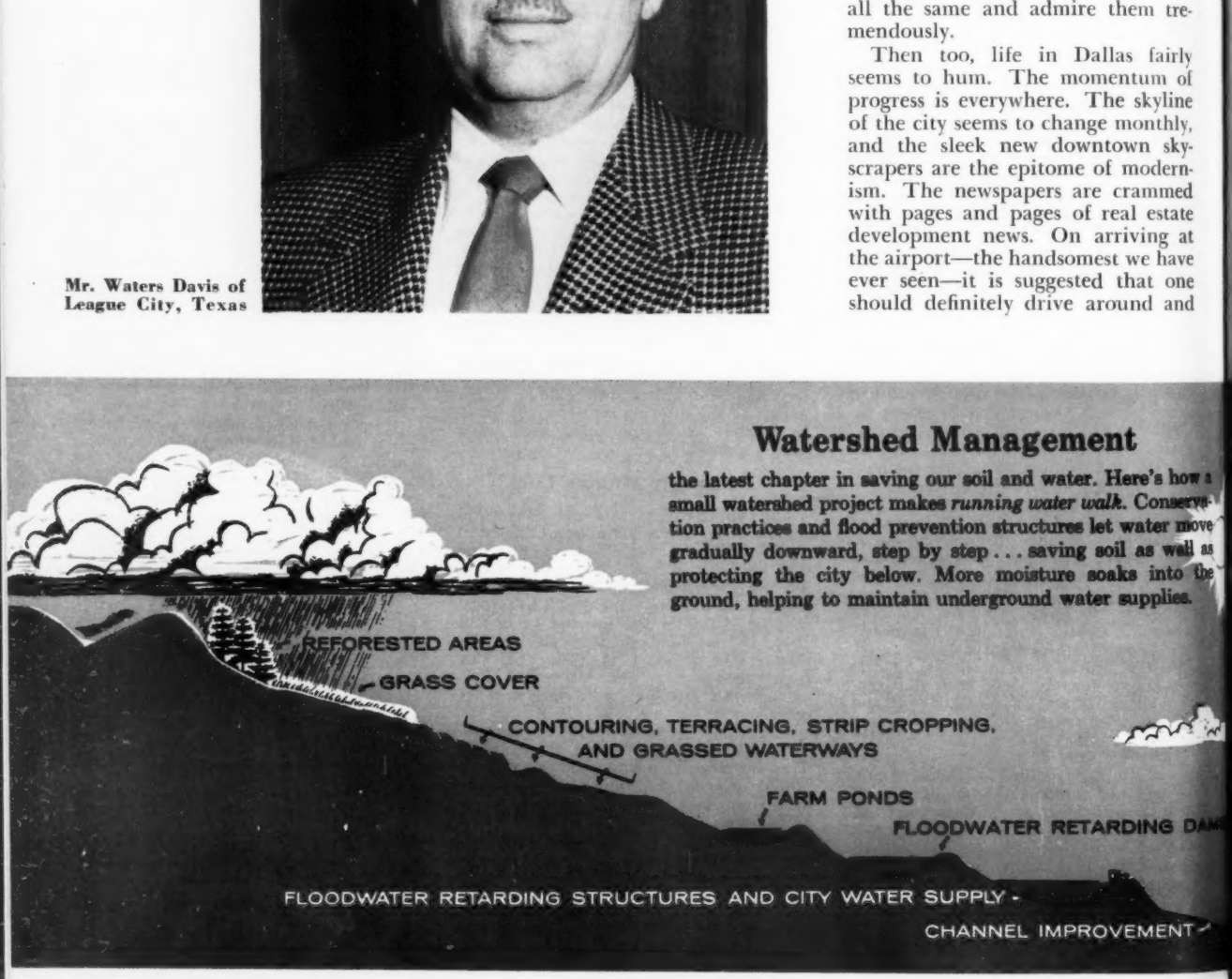
There was only one thing wrong with the Fifth National Watershed Congress last month in Dallas, Texas: General Chairman Waters Davis was ill and wasn't there. But the concepts this Texas conservationist has preached since 1944 were very much in evidence. Cooperation was the order of the day.

CRUSAD

Mr. Waters Davis of League City, Texas

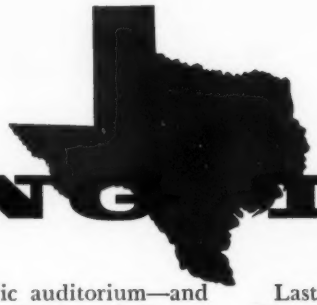
THERE'S something about Texas — but it's difficult to explain exactly why, when you go to put your finger on it. It's big, of course, and things are on the go. Take Dallas, for instance. The people there, even the policemen, are genuinely friendly. They want you to like them. Their uninhibited approval of all things Texan and their boisterous capacity for mighty enthusiasms sometimes tend to make reserved easterners even more reserved, but the easterners like them very much all the same and admire them tremendously.

Then too, life in Dallas fairly seems to hum. The momentum of progress is everywhere. The skyline of the city seems to change monthly, and the sleek new downtown skyscrapers are the epitome of modernism. The newspapers are crammed with pages and pages of real estate development news. On arriving at the airport—the handsomest we have ever seen—it is suggested that one should definitely drive around and



Watershed Management

the latest chapter in saving our soil and water. Here's how a small watershed project makes *running water walk*. Conservation practices and flood prevention structures let water move gradually downward, step by step . . . saving soil as well as protecting the city below. More moisture soaks into the ground, helping to maintain underground water supplies.



ADIN TEXAN

By JAMES B. CRAIG

see the new civic auditorium—and one should. A real Atlas missile was on display near the front door the last time we were there, right in the heart of the city.

Nothing is regarded as impossible by Texans. A long-time civic leader looks you straight in the eye and tells you Dallas one day will be a great seaport city—which is the equivalent of saying that Omaha, Nebraska, will one day receive ocean-going vessels. Big talk? Maybe, but in Texas they just might do it. Any town that has banks with employees on roller skates to take care of the depositors is capable of almost anything, in our judgment. We saw this in action at P. B. "Jack" Garrett's Texas Bank and Trust Company. The depositors drive into the bank on ramps (first and second floors) and attractive young women roll up on skates with deposit slips and other necessary forms. According to Mr. Garrett, this helps to keep "both the people and money downtown, where they belong."

Last month found the National Watershed Congress moved into this beehive of a city for its fifth annual convention. The convention was a resounding success and nailed another rung to the ladder in the climb toward a united land and water policy to which all sponsoring groups can give their full support.

Congress speakers were (seated, l.) Nolen J. Fuqua, U. S. Senator Roman Hruska, P. B. Garrett, (standing, l.) Charles C. Butler, C. R. Gutermuth

A watershed management plan to make water walk was prepared by the Allis Chalmers Mfg. Co.

Actually, there was only one thing wrong with the fifth congress, and that was that Waters Davis, general chairman of the meeting for five years and a crusading soil and water conservationist since 1944, was ill at his home in League City, and couldn't attend.

Waters Davis is a Texan. A leading rancher and timberland owner, Chairman Davis (see cover) was roped into the national soil and water program in 1944. Acording to him, he "came out of the barnyard the wrong way one morning" and ran into "a very innocent-looking gent who told me he was looking for someone to run for supervisor of a new outfit called a Soil Conservation District." Waters ran for the job, was elected, and the next thing he knew he was travelling 100,000 miles a year visiting Soil Conservation Districts in every state in the union.

The Soil Conservation District idea strongly appealed to a man of Davis's temperament. He believed that American farmers should organize and solve their own soil conservation problems with a minimum of help from government. As written into numerous state laws, the plan looked foolproof to him, because it was founded on democratic ideals with the control in the hands of the farmers on the land. As he continued to visit all 2,600 districts in the nation over a period of years, he became even more convinced of that fact.

Davis's rise in the vigorous young program was rapid. He served as president of the Texas Association of Soil Conservation District Supervisors in 1947, and in 1950 became president of the national organization, to which post he was re-elected in 1951, 1952, 1953 and 1954.

In helping to sell the districts idea, Davis in 1947 wrote a "best selling" publication entitled "Texas Topsoil," and followed it up with an-

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Society Meets at Salt Lake

TWO of the most potent factors in the forestry movement of this generation are the growing emphasis on multiple use and America's growing forestry leadership throughout the world," Tom Gill, executive director of the Pack Forestry Foundation, told the annual meeting of the Society of American Foresters in Salt Lake City last month.

In speaking on the subject of "Widening Horizons," he said that both of these factors "have in common this sense of widening horizons, widening responsibilities and usefulness. The ultimate benefit may not end in the work itself, important as this may be, but in the implications.

"In multiple use," he said, "the implications lie in increased awareness of how essential a part forestry plays in human living. . . . In world forestry the implication may not only be in bringing a new security to peoples who have almost lost hope, but in cementing a little closer the sorely-needed bonds between nations and peoples."

With forestry heading for another world congress in 1960, Mr. Gill deplored our lack of forestry aid abroad. He declared that ignoring the value of forestry is costly to the U. S. taxpayer in money as well as friends in foreign lands. He soundly criticized the International Cooperation Administration, the federal agency in charge of foreign aid, for not being oriented toward the values of resource management. "Despite the fact that 50 percent of the land the ICA is concerned with is forested, forestry has been put in a branch of special commodities along with tobacco, vegetables and soft drinks," he said. Forestry is a major form of land use, and therefore should receive proper attention from the agency's policy makers, Mr. Gill added.

Tom Gill is the executive director of Charles Lathrop Pack Forestry Fund

At an earlier session, foresters heard a panel of five speakers cite recreation as a primary use of forest lands, and take issue with the idea that recreation on forest lands cannot develop along with other forest uses. The panel estimated that by the year 2000 a need will exist on federal forests for 14 million acres of wilderness area and 740,000 of intensely developed picnic and camping areas (about eight times the present amount). They contended that the only way sufficient recreation areas can be developed is to depend on existing lands for coordinated resource uses, including timber harvest, watersheds, minerals, and grazing.

"We are in an era of burgeoning public demand for outdoor use of forest lands," declared Lemuel A. Garrison, superintendent of Yellowstone National Park. "The social value of public forests to their American citizen-owners must command increasing recognition."

James P. Gilligan, of the University of California Extension Service, suggested that perhaps free use of camp areas was the reason for excessive use, and therefore, the emphasis should be placed on better wilderness areas rather than more land.

Another speaker, C. J. Olsen, director of Utah State Parks and recreation, pointed out the economic importance of forest recreation. Mr. Olsen recalled that, "A congressman from Florida once told a House committee that the Everglades National Park was important to the state's economy. In fact, the congressman said that one Yankee tourist is worth as much as 20 acres of cotton, and a lot easier to pick."

The resolution on the Wilderness Bill was perhaps the most controversial issue on the meeting's agenda. AFA's Chief Forester Kenneth B. Pomeroy opposed the bill, as does AFA. He declared that the bill favors a single use rather than multiple use, and added that the bill would play into the hands of special and single interest groups. "Foresters would be excluded," Pomeroy said.

In favor of the bill was Howard Zahniser, executive secretary and editor of The Wilderness Society, who stated that the Wilderness Bill is a measure designed to fit in with economic and other programs and not to conflict witn them. "What the bill most needs," according to Zahniser, "is to be clearly understood." He told the foresters that the bill's provisions will in no way damage existing programs and interests, and it gives Congressional recognition to wilderness as part of a multiple use program.

As Zahniser said further, "We need the Wilderness Bill because we cannot expect any of our areas to endure as wilderness accidentally. All

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Schlick Award Winner

Heintzleman

For outstanding service to forestry, B. Frank Heintzleman was awarded the Sir William Schlick Memorial Medal by the Society of American Foresters. The former governor of Alaska, who had previously served 16 years as U. S. regional forester in Alaska, in accepting the award, told the meeting of the vast possibilities for resource development in Alaska. "Congress gave our new state a huge land grant, 103 million acres, an amount the size of California," he said. "This is an opportunity to show what we can do for ourselves. Here, indeed, is a challenge in resources management; especially as we can start with practically virgin conditions. Never again will such an opportunity on such a scale exist on U. S. soil."

By ALBERT G. HALL

WILL REORGANIZATION OF FEDERAL FORESTRY AGENCIES BE EFFECTED IN 1959? This question may be answered by the make-up of the Congress when it returns in January, 1959. The Senate Committee on Interior and Insular Affairs, back in 1956 reported on studies of timber sales policies of the various federal agencies primarily responsible for the management of federal land resources. Its report included, as the number one item: "We recommend the consolidation within the Forest Service of the forestry functions and the surface resource management responsibilities for commercial forest land under the jurisdiction of the Bureau of Land Management and the Bureau of Indian Affairs." The committee also asked that the President, under the authority provided by the Reorganization Act of 1949, prepare a reorganization plan to be placed before the Congress in January, 1959. Responses by the agencies concerned have been received by the committee. Forest Service (Department of Agriculture) did not respond to the recommendation. Interior Department opposes the recommendation. The Bureau of the Budget has begged off from answering "yes" or "no", indicating, however, that the recommendations of the committee will be given "full consideration" in the development of the President's 1959 legislative program.

OTHER RECOMMENDATIONS OF THE INTERIOR COMMITTEE to the federal land management agencies are concerned with more intimate details of federal sales policies. Responses of the agencies concerned are generally in accord with the recommendations of the committee, and indicate that work has already been done on many of them. Readers wishing to study the details of pricing and contract recommendations, and the agencies' responses, may obtain the report by writing to the Senate Committee of Interior and Insular Affairs, Washington 25, D. C.

SENATE INTERIOR COMMITTEE IS CONTINUING ITS STUDY OF NATIONAL FOREST TIMBER SALES through the adjournment period. Robert Wolf, forester on the staff of the committee, is now in the West examining timber sales programs on the national forests of Montana, Idaho, Washington, Oregon, and California. Purpose of his study is to determine where immediate increases can be made in timber offered for sale within sustained-yield limits. Senator Murray of Montana, committee chairman, in announcing the current study, said: "Congress has provided substantial increases for national forest programs, but timber sales goals have not been fully met." He said the committee will work closely with the Forest Service to "foster the necessary improvements to enable the national forests to make their full contribution to a healthy economy." Wolf's study, to be completed by December 1, will be ready for Congressional use when the 86th Congress convenes in January, 1959. The committee's study was touched off by a delegation of northwest timber operators who visited Washington, D. C., just before the 85th Congress adjourned to see if it is not possible for national forest timber sales to be scheduled both as to timing and quantity to assure continued support of local forest economies.

EXPANDED SOIL AND WATER RESEARCH RECOMMENDATIONS are being sought by the Department of Agriculture in a series of hearings currently being held throughout the country. During October, the department heard the recommendations of land and water interests in South Dakota, Utah, Idaho, South Carolina, California, Arizona, and Texas. In November, hearings will continue in Pennsylvania,

(Turn to next page)

Massachusetts, Washington, D. C., Iowa, Indiana, Tennessee and Louisiana. The hearings were requested by the Agriculture Subcommittee of the Senate Committee on Appropriations, and will probably constitute a base for legislative proposals in the 86th Congress.

SMALL BUSINESS COMMITTEE AND SMALL BUSINESS ADMINISTRATION are planning to hold hearings on how to implement the recent amendment to the Small Business Administration Act providing for special consideration of small business in the sale of government property. While the amendment applies to all government property sales, except water and power, it was introduced specifically in behalf of small purchasers of government timber. It has implications, however, for the sale of federal grazing rights, mineral leasing, and other materials and resources. Apparently the amendment was approved by Congress without previous discussion with either the SBA or the agencies concerned. It is expected that the Senate committee will hold hearings in the Northwest, the Lake States and the South; and that SBA will concentrate on the West Coast.

KLAMATH INDIAN TIMBER LANDS WILL BE OFFERED FOR SALE EARLY IN 1959, if the present progress in Bureau of Indian Affairs is maintained. In anticipation of the sales program, sales offices are being established in Klamath Falls, Oregon. Under the terms of the amendments to the Klamath Termination Act, the burden of developing the final sales program has fallen upon the Bureau of Indian Affairs. It has picked up the work of the management specialists and is carrying on from there. In process: the required review appraisal, definition of timber and marshlands, selection of lands to be offered for sale to satisfy the withdrawing members of the tribe, and setting up the trusteeship outline for management of the reduced tribal ownership. Units not sold by April, 1961 to purchasers who will agree to long-term sustained-yield covenants are to be acquired by the federal government and placed under the management of the U. S. Forest Service.

AN INCREASE IN SOIL BANK TREE PLANTING RATES FOR 1959 is expected to result in increased farm acreage put under the conservation reserve phase of the program. New rates, determined for each county by state Agricultural Stabilization committees are coordinated in Washington, D. C. Final determination of rates for individual farms is made by county ASC committees based on the county averages and upon the rental value of the land put in reserve. State averages range from $9.00 an acre in Colorado, New Mexico and Wyoming to $20.00 in Connecticut; county averages within these state averages may be more or less depending upon the productivity of individual farm acreages placed under the conservation reserve. For the placing of all eligible land within the conservation reserve, farmers may receive a 10 percent increase over the normal rate. Ceiling on the reserve is $25 an acre. So far, during the entire Soil Bank program, 1,075,000 acres have been planted to trees, which accounts for slightly more than 10 percent of the total conservation reserve. The goal for 1958 is an additional 12 million acres in the conservation reserve. If tree planting holds to its average of 10 percent, as is expected, another million acres or more will be launched on trees for the future.

BRISTLECONE PINE AREA WILL BE PRESERVED in the Inyo National Forest in California to protect what is believed to be the oldest living thing on earth. The 26,760-acre public land withdrawal is being sought by the Department of Agriculture in order to close the area to mining and mineral leasing. The trees have no commercial value, except for souvenir specimens, and this use has been prevented by the U. S. Forest Service in order to retain in their natural state some 100 trees which are over 4,000 years old and thousands of others in the 3,000 to 4,000-year age bracket.

AFA'S CHIEF FORESTER KEN POMEROY CUT A PLATTER for WRCA in New York, interviewing Smokey the Bear on the Conservation Caravan. Smokey (played by Bill Huber of the Forest Service) described the wonderful things they had seen on the Caravan's route, and told how school children had met the train at each stop to give Smokey their envelopes for the Forest Conservation Stamp. The recording was broadcast on radio stations across the country, Saturday, October 25, at 1 p.m.

Editorial

A "Green Belt" for the Future

On May 27, 1924, the National Conference on Outdoor Recreation appointed by President Coolidge opened its initial meeting with prayer, sang the first and last verses of "America," and proceeded to business. Approximately 128 national organizations were in attendance and the list was studded with familiar names in conservation—Hoover, Jardine, Wallace, Merriam, Weeks, Ringland, Butler, Allen, Chapman, Wharton, Graves, Yard and Kneipp—to name just a few.

In calling the conference President Coolidge took cognizance of the upsurge in recreational use of land and expressed the belief that the federal government should take the lead in coordinating the various types of activity to the end that the "Chance of outdoor pleasure, with all that it means, *be placed within the grasp of the rank and file of our people, the poor man as well as the rich man.*"

In further developing this concept, Secretary of War Weeks, the conference chairman, said that in the past economic influences in the use of land had outweighed social uses—a condition that was largely inevitable in the growth of a new country. However, Chairman Weeks stressed that a "point of development has now been reached when economic and social factors must be brought into balance."

This was a worthy challenge, and the conference went to work with a will to meet it. The excellent conference report filed four years later served as a catalytic agent in setting off a whole chain of events aimed to better recreational opportunities, especially in the East. As AFA's Chief Forester Kenneth B. Pomeroy told the Society of American Foresters last month and as reported in this magazine on page 16, Great Smoky Mountains National Park was created almost immediately. Acquisition of national forest lands in the East was stepped up. Legislation to create new game and bird refuges was enacted, and cooperative game management with the states was improved. National parks policy was strengthened. Research programs were beefed up. Wilderness patterns were broadened. In addition to these direct results, there were also those that were more indirect. AFA concluded, for example, that if recreation was to be boosted we'd better stop burning it up. Accordingly, the association raised a quarter of a million dollars and launched its militant "Dixie Crusade" to stop forest fires in the South.

These were some of the things this first recreation conference brought about. Today we have an equally able commission named by President Eisenhower and headed by Laurance S. Rockefeller, and the members will find this earlier report (it weighs four and a quarter pounds) a gold mine of useful information.

Did any useful patterns emerge from this first report that provide a link with the present? It seems to us there was at least one. In studying the report, one gains the impression that the conference, without actually being conscious of the fact, started the creation of what might be termed a "Green Belt" following the highlands and mountainous areas contiguous to the Appalachian Mountain range from the Northeast to the South. With much of our Eastern seaboard now becoming one big, sprawling suburb, perhaps the time is again ripe to further consolidate a recreational "Green Belt"—a sort of new Main Line of Resistance that would make it a national policy to create parks, forests, refuges and recreational areas of all types and descriptions in a greater effort to serve an exploding population that gives little sign of slacking off.

While the West is big and beautiful, it is the East that should be given priority in much of this recreation planning. If Mr. Coolidge's concept that recreation should "serve the poor man as well as the rich man" is to be made a reality, we are going to have to place more recreational opportunities within a day's drive of the bulk of our population. Emphasis on a "Green Belt" that would parallel the Eastern Seaboard and densely-populated industrial Mid-West would do just that, as well as relieving the pressures on existing recreational areas.

And there would be many other conservation advantages. In addition to new parks and better forests for the future, such a program could ultimately strike a mighty blow in the curbing of erosion on much abandoned and poorly-managed land—land that each year sends millions of tons of sediment down our rivers and past the front doors of our major seacoast towns and cities. Wildlife would benefit, since some specialists tell us that game and some birds live adjacent to growth transition zones which enable them to move easily from summer to winter feeding grounds.

One thing is sure. The new recreation commission faces one of the most challenging jobs handed out by the present administration. The pressures on land today are much greater than during the Coolidge regime. Perhaps this commission, too, should open its meetings with prayer, sing all the verses of "America," and vow that no matter how tough the job may be, future generations will know there were people in the year 1958 who did not forget to leave them a green legacy of thriving parks and forests. What better year to start such a program than the Roosevelt Centennial?

The Truth About

By C. H. HOFFMANN

Assistant Director, Entomology Research Division, Agricultural Research Service, U. S. Department of Agriculture

Engelman spruce beetle killed valuable timber on White River National Forest

A LANDMARK in forest-insect control was the discovery, in 1944, of the usefulness of DDT dispersed from airplanes for the control of important defoliating insects. At last an effective and economical method was found to control these pests over large and inaccessible areas. Forest insects are recognized as the most important single hazard of forests, a crop that takes a long time to mature and has a low annual financial return per acre. In the United States the Forest Service estimates that insects are responsible for 40 percent of all mortality of saw timber and 28 percent of the mortality of growing stock. Each year about 25 billion board-feet of timber are either killed outright or prevented from growing because of insects. To protect these values, as well as fish and wildlife and their habitats, the soil, and recreational areas, approximately 19 million acres of forest lands in the United States have been sprayed with DDT from airplanes since 1945. Some outbreaks, such as that of the spruce budworm, continue for a number of years, and spraying of new infestations is required if forests are to be saved. In 1958 it is planned to spray about 1¼ million acres to suppress outbreaks of the spruce budworm in Oregon, Arizona, Montana, Minnesota, and Maine. About ½ million acres have already been sprayed in Pennsylvania, to eradicate the gypsy moth. In connection with such large-scale spray programs, careful consideration must be given to a number of aspects.

Factors influencing decision to spray or not to spray.—Whether or not to spray is usually a difficult decision facing the forest manager. He must consider the effects of the spray on the many uses of the forest. In federal-state-private cooperative spray programs, entomologists make

CHEMICAL CONTROLS

DDT sprayed from planes at rate of one pound per acre will control several important defoliating forest insects.

surveys to determine the severity of the outbreak—particularly in highly-valued timber—the magnitude of the problem, the various interests involved, and the best approach for the control of the insect concerned. What will the losses be if no control measures are undertaken? When infestations are low and limited in extent, there may be a tendency not to spray. However, a decision to delay spraying for a year may result in a widespread outbreak which could have been prevented. In determining whether or not to spray, a careful evaluation must be made of the effects of weather and biological-control agents on the populations of the pest species. One year Dowden showed that the spruce budworm in the Adirondacks was greatly reduced by natural factors and recommended that plans for aerial spraying be canceled. What damaging side effects upon fish and wildlife, if any, may be expected from a particular control program? What is the cost?

This brings up the question of what control method or methods should be used. The following are ordinarily considered:

(1) *Sanitation - salvage logging.* Wherever there is a market for selling infested timber, and roads are available, or it is feasible to construct them, logging is utilized. It not only reduces a pest outbreak but also removes the potential snags and dead material that are the aftermath of outbreaks and would be serious fire hazards. However, this method alone is not usually sufficient to stop a pest epidemic.

(2) *Biological control.* The introduction and dispersal of parasites and predators have been very helpful in controlling pest populations. However, when they fail to keep up with the injurious species and other conditions are just right, epidemics

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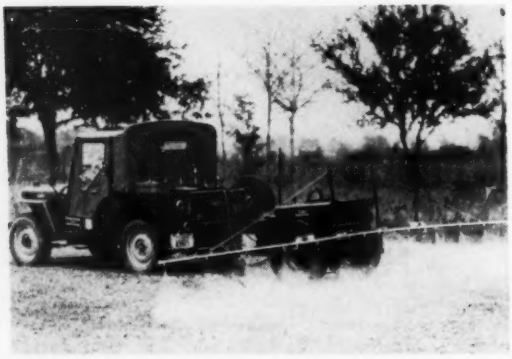
Orchard sprayer is used to treat fire ants' mounds

Masked men load a jeep sprayer with fire ant poison



A weed boom on jeep treats large ant-infested areas

Ants abandoned mound, and built new one next to it

By CLEVELAND VAN DRESSER

MAN

SINCE the beginning of time man has waged war with insects for the fruits of the land. The casualties have been heavy on both sides. Not only do insects "harvest" a large proportion of the crops man produces for himself, they also spread disease and death, not only to man, but also to wild and domestic animals, birds and fish.

We read in the Bible of the locust plagues that swept Egypt many centuries ago. We also learn in medieval history of the terrible diseases carried by insects that decimated the peoples of Europe and England.

History is replete with recountings of the deadly wars between man and bugs. The toughest enemy encountered in building the Panama Canal was the mosquito which carried the germs of malaria. This menace all but wiped out the working force of men and nearly forced abandonment

Fire ants feeding on a flower bud of okra

of the project. In our country, swarms of grasshoppers, locusts and beetles inflicted great hardships on our forebears. In Salt Lake City there is a monument to the seagull, erected by the Mormons who first settled the region. The early Mormons faced certain starvation from the inroads of billions of grasshoppers until huge flocks of gulls flew to the rescue and killed off the grasshoppers.

Even today, thousands of persons are dying in Korea from encephalitis (sleeping sickness) which is transmitted by the tsetse fly.

In many instances, the insect plagues that have ravished various regions of our land have come from other countries. It is an unhappy fact to face, but insects imported from foreign lands usually have no natural enemies in this country to keep their numbers in check. When confronted with such a favorable situation, insects multiply at a terrifying rate, and destruction of crops, domestic animals and wildlife amounts to a national calamity. Witness the names of several of the insects that have decimated our land in the past two centuries: Japanese beetle, Mediterranean fruit fly, European corn borer, Hessian fruit fly, to name but a few.

In the memory of most persons alive today is the frightful destruction wrought the Florida citrus crop by the Mediterranean fruit fly during the late 1920's. Had it not been for the courageous and prompt action by both the U. S. Department of Agriculture and the Florida state agricultural officials, the citrus industry of Florida could well be but a memory today.

Man has won at least temporary victory of a "holding action" variety over many of his insect foes, but the bugs ofttimes come back with fresh and more vigorous attacks. Reports that certain insect menaces have been "exterminated" all too often prove to be premature. DDT was not long ago considered a sure killer of mosquitoes. However, today some mosquitoes have become practically DDT-proof, and other methods of controlling the pests must be used. It seems that as soon as man has perfected a pesticide for controlling an insect, that insect sets about making himself immune to the pesticide. This is a never-ending war, with man pitting his ever-increasing knowledge of chemical control against the insects relying on sheer numbers and acquired immunity.

The latest foe in the deadly war is the fire ant. Like many of his predecessors, the fire ant is a foreigner. He comes from South America. The ant was introduced into the United States by ships which docked at Mobile, Alabama, and other southern ports.

The fire ant menace is no minor chapter in the war on insects. Already the fiendish little devil has affected more than 27,000,000 acres in ten states, mostly in the southeast. Heavy infestations are reported in Louisiana, Mississippi and Alabama,

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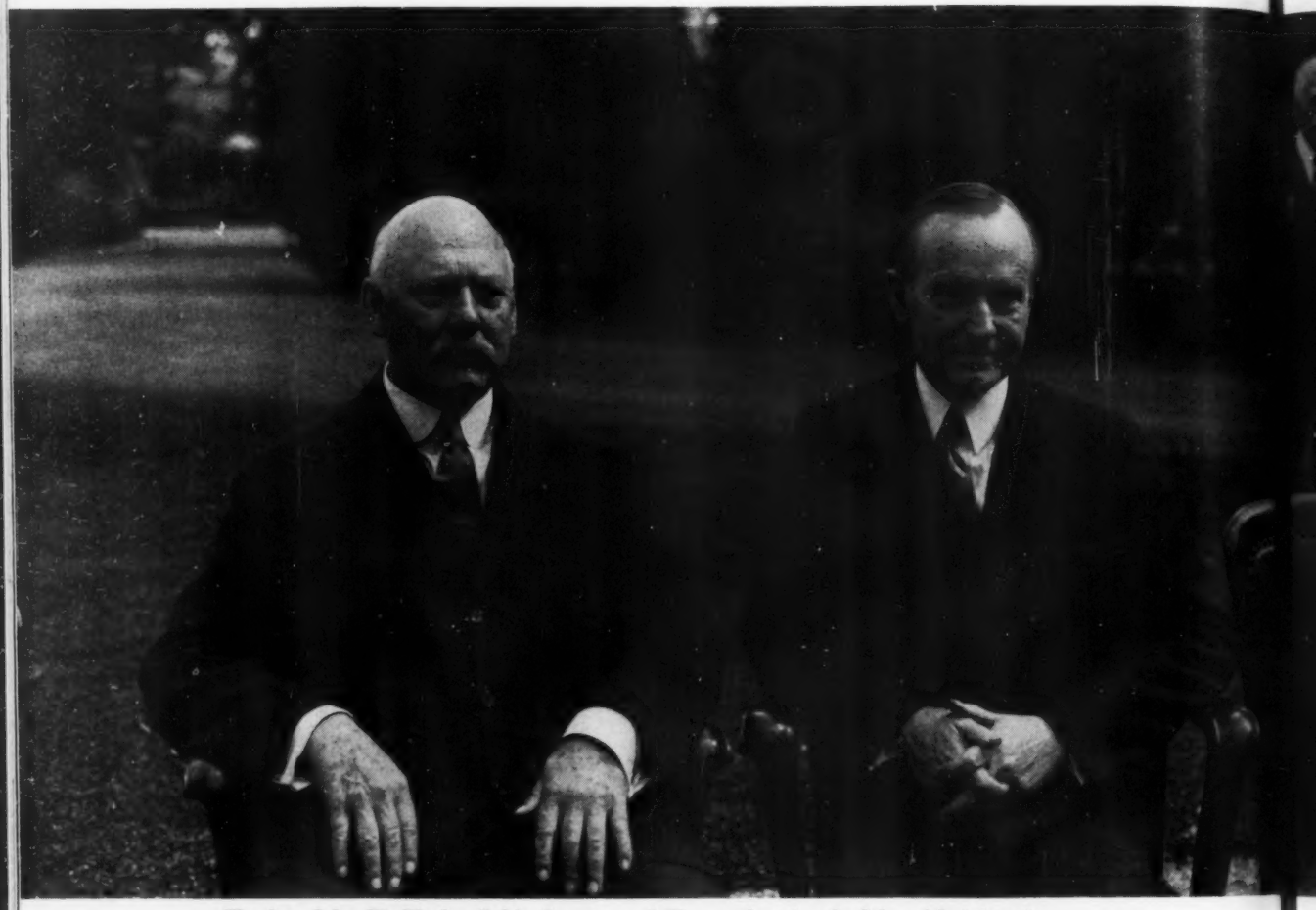
VS ANT

The reasons which motivated President Coolidge in 1924 to organize the National Conference on Outdoor Recreation could well serve as the guiding principles for the National Recreation Commission appointed in 1958

By **KENNETH B. POMEROY**
Chief Forester,
The American Forestry Association,
Washington, D. C.



The late John W. Weeks (left), Secretary of War under the Coolidge Administration, was appointed chairman of the National Conference on Outdoor Recreation by President Coolidge (right)

THE recreational facilities available now throughout the United States and its territories, as well as future needs in the year 1976 and the year 2000, will receive searching study by a newly created commission. This body, to be known as the National Outdoor Recreation Resources Review Commission, is an outgrowth of an idea conceived in 1949 by the Izaak Walton League of America and supported by many other conservation organizations.

Ironically, few of the sponsors ever heard of an earlier National Conference on Outdoor Recreation or know that its illustrious executive committee was appointed by President Calvin Coolidge to serve a 4-year term from 1924 to 1928. Perhaps the accomplishments of the previous conference should be reviewed before examining the present Commission.

The National Conference on Outdoor Recreation functioned with a minimum of federal money. But with the active, energetic support of many conservation organizations raised substantial sums by popular subscription for its surveys.

The purpose of the 1924-1928 conference was set forth in a report to the Honorable John W. Weeks, Secretary of War and chairman of President Coolidge's committee:

"The objective to be sought is the attainment of a balanced system of national economy, a system that will adequately provide for an optimum population, that is, the number of people which the land and its resources can permanently maintain without lowering accepted standards of living. . . .

"A reasonable amount of leisure and opportunity for its enjoyment by all classes is a necessary complement of material well-being. Outdoor recreation is the most wholesome expression of leisure and a

The New

National Outdoor Recreation Resources Review Commission

needful social force in the readjustments of American life to meet new conditions. It is a form of land utilization that must find its proportionate place in city, regional, and national planning, if vigor of the people and their productive efficiency is to be maintained. In the past, economic influences in the use of land have outweighed social uses. This has been largely inevitable in the growth of a new country. A point in development has now been reached when economic and social factors must be brought into balance."

These thoughts are as sound and meaningful today as they were then. Subcommittees of the national conference made thorough studies of county and municipal park problems, recreational uses of state forests, recreational resources of federal lands, and coordination of national parks and national forests. Then recommendations were made regarding formation of a federal recreation policy. Some of the suggestions were:

Creation by law . . . of a continuing agency or commission to develop a federal outdoor recreation policy.

Adequate appropriations for the prevention of forest fires.

Establishment by law of the objects and standards of the national parks system . . .

Addition to the present park system of areas fully meeting national park standards. (This resulted immediately in creation of the Great Smoky Mountains National Park.)

A program for acquisition of national forest lands east of the Mississippi River. (This became the McNary-Woodruff Act. P. L. 326, 70th Congress.)

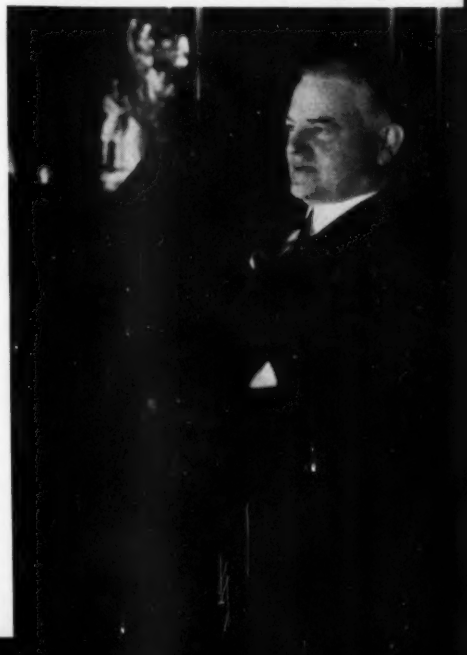
Formal delimitation by proclamation of the Secretary of Agriculture of wilderness areas within the national forests. (The Leavitt bill, H.R. 10659, 70th Congress.)

Establish within national forests, with the consent of the states, sanctuaries and refuges for game, furbearers, birds and fish (Robinson bill, S. 2456, 70th Congress.)

Strengthen cooperative agreements with states to provide complete game administration.

Protect the natural habitat of migratory birds (P.L. 304, 70th Congress.)

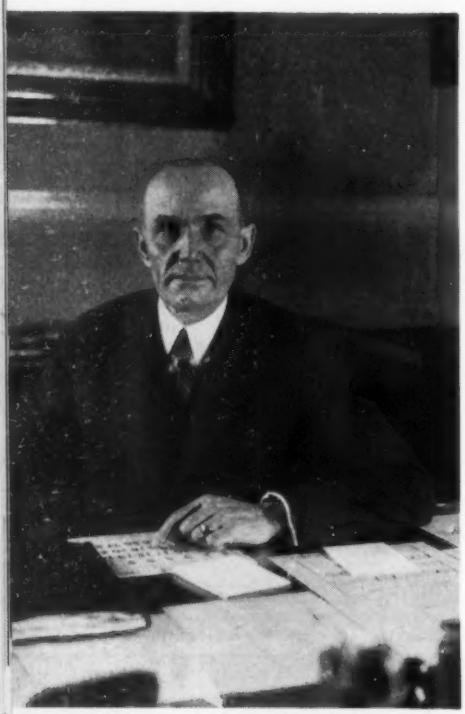
Former President Herbert Hoover, then Coolidge's Secretary of Commerce, was a member of national recreation group



Classification of lands of the public domain chiefly valuable for recreation under the act of June 14, 1926. (Many federal lands have been and still are being turned over to state and local political units for recreational development under this act.)

A definite long-term program establishing a firm basis for forest research and the relation of wildlife and recreation to forestry. (McSweeney-McNary Act, May 22, 1928, 45 Stat. 699.)

The Committee on Coordination of National Forests and National Parks made a detailed field examination and worked out a mutually satisfactory adjustment of boundaries for eight existing parks and two new proposals.



Coolidge also appointed his Secretary of Agriculture William Jardine to group

These accomplishments present a monumental challenge that the present recreation commission will be hard put to match during its scheduled three-year existence.

The new survey has been authorized under Public Law 85-470, June 28, 1958. Its administrative body will be known as the National Outdoor Recreation Resources Review Commission.

The purposes of the act, as stated in its preamble, are:

a) "to preserve, develop, and assure accessibility to all American people of present and future generations such quality and quantity of outdoor recreation resources as will be necessary and desirable for individual enjoyment, and to assure the spiritual, cultural, and physical benefits that such outdoor recreation provides;

b) "to inventory and evaluate the outdoor recreation resources and opportunities of the nation, to determine the types and location of such resources and opportunities which will be required by present and future generations;

c) "to make comprehensive information and recommendations leading to these goals available . . ."

The act provides:

1) "'Outdoor recreation resources' shall mean the land and water areas and associated resources of such resources . . . which provide opportunities for outdoor recreation, irrespective of ownership."

2) It shall not include recreation facilities associated with urban development such as playgrounds, golf courses and city parks.

3) The commission shall consist of 15 members. On September 15, 1958 President Eisenhower appointed Laurance Rockefeller chairman, and backed him with an equally capable committee.

The other six citizen members are Samuel T. Dana, Professor Emeritus of Forestry, University of Michigan; Mrs. Katharine Jackson Lee, a director of The American Forestry Association; Bernard L. Orell, vice president, Weyerhaeuser Timber Company; Joseph W. Penfold, conservation director, Izaak Walton League of America; M. Frederick Smith, vice president, Prudential Life Insurance Company; and Chester S. Wilson, a former Minnesota conservation commissioner. Mr. Rockefeller is president of Rockefeller Brothers, Inc. and a founder of the Conservation Foundation.

The eight Congressional members are Senators Anderson (New Mexico), Barrett (Wyoming), Neuberger (Oregon) and Watkins (Utah), plus Representatives Pfost (Idaho), Rhodes (Arizona), Saylor (Pennsylvania) and Ullman (Oregon).

4) The commission will appoint an executive secretary and such other personnel as may be necessary.

5) Each federal agency with an interest in recreation will appoint a liaison officer to work with the commission.

6) An advisory council of 25 members will assist the commission. These people will represent state, municipal, and private interests in all phases of outdoor recreation.

7) The commission ". . . shall set in motion a nationwide inventory and evaluation of outdoor recreation resources and opportunities . . ."

8) An estimate shall be made of the nation's recreational requirements by the year 1976 and the year 2000, followed by recommendations of the policies and programs to meet such requirements.

9) The commission must submit its report by September 1, 1961.

What studies should the new commission undertake? The first tasks will be to define the nature and scope of its own activity. Then to devise ways of assessing the individual values of all phases of recreation; estimate the long-term needs of each one; and determine to what extent they may be correlated with one another. In the process the commission likely will discover that a great many people must be educated to the overall requirements of the nation. Some specific study projects might be along the following lines:

Responsibilities—federal, state, local, and private

One of the major tasks facing this new recreation commission is to define the respective responsibilities of federal, state and local agencies as well as private landowners both large and small.

Obviously the federal government must play an important role because it is the largest landowner and it represents all of us. Both the national forests and the national parks are used heavily by the general public. So it is natural for the Forest Service and National Park Service to share major federal responsibilities for recreation.

The Bureau of Land Management, in a policy statement approved by the Secretary of the Interior on April 16, 1958 said: "The establishment of a suitable public recreation area for state or local use and enjoyment and provision of any attendant public recreational facilities and services is ordinarily the responsibility of state and local agencies rather than the Bureau of Land Management.

"Any consideration of public recreational needs . . . by the bureau should not be construed as substituting for the initiative which state or local agencies should take in filing timely applications to lease or purchase public lands for public recreation purposes."

The point here is that state and local agencies are collecting the reve-

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Who Will Lead...

In Conservation Opportunity Number One?

Howard Hopkins

HOWARD HOPKINS, forester, devoted citizen, outstanding public servant, retired June 30, 1958 from his position as assistant chief of the Forest Service, U. S. Department of Agriculture.

It is unusual for members of Congress to take note of a career government employee's retirement. For Howard Hopkins, the occasion brought personal letters from members, and on the floor of the Senate an extraordinary tribute to his "colorful and fruitful" career by Senator John Stennis of Mississippi. "Mr. Hopkins," the Senator's remarks began, "is closing a career of more than 35 years of unselfish service, 35 years devoted to the development and conservation of our Nation's forests, soils, and waters."

Born in New Haven, Connecticut, he is the son of Edward Washburn and Mary Sanger (Clark) Hopkins. He and Mrs. Hopkins (the former Maybelle Ersbo) now live at Island Avenue, Madison, Connecticut. They have two children, Priscilla Jeanne (Mrs. William Foster), and Howard Clark Hopkins.

With A.B. and Master of Forestry degrees from Yale, Hopkins began his life work in 1923 on the White River National Forest, Colorado. From there he went to the Chippewa National Forest, Minnesota, where he was supervisor from 1928 to 1930.

Then to the Washington office as inspector in timber management; assistant regional forester, Region 7, 1933-35; state and private forestry, 1935-38; assistant director, New England Timber Salvage Administration, Boston, 1938-39; associate regional forester, San Francisco, 1940-41; and chief of the Timber Production War Proj-

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By HOWARD HOPKINS and CLIFF OWSLEY

IN America today the number one conservation opportunity lies in conserving human and natural resources in the same operation. We can save the land while saving the lads. The facts are at hand, the need urgent. Missing is one ingredient—leadership.

A nation's most vital assets are first its people, and second its natural resources — soil, water, forests and forage. Both human and natural resources must be protected and improved if a country is to survive and prosper. To improve one and neglect the other is folly. Thus, every conservationist has a stake in the economic and social welfare of people.

To improve our human resources we need to give special attention to teen-agers, that is, the young growth. Almost weekly we get a new shock from worsening conditions in this age group. Teen-age gangs, gang fights, and other crimes of the young are getting more frequent and serious. Let's listen to an expert on this subject.

J. Edgar Hoover recently had this to say before a meeting of the American Bar Association: "My concern over the increase in total crime and the toll in dollar costs is matched by my concern over the disturbing growth of juvenile crime. In 1957, persons under 18 years of age represented 53 percent of all arrests reported for robbery, auto theft, burglary and larceny. Figures from city police reports show that since 1952, the population group under 18 years of age has increased 22 percent, while arrests of persons under 18 have increased 55 percent."

Reform schools and prisons become more crowded. Young, first offenders are mixed with hardened criminals. Overcrowded facilities often prevent rehabilitation programs in the few communities where funds for such work may be available. The high cost to the public of larger police forces, reform schools and jails is rapidly increasing. But, most important, these are not solving the problem.

Resource conservationists may properly question how this human rehabilitation problem involves them when their hands are full trying to keep forest and allied resources in good shape. However, as experts in managing forests, soil, and water, they do have a responsibility in the human resource field. Their responsibility is to find out where improvement in natural resources may at the same time be used to rehabilitate human resources. Here is a chance—and a challenge—not to kill two birds with one stone, but to save two.

We can save many of our youngsters for useful lives by putting them to work improving forests and soils. The ultimate savings in money will be considerable. But the rewards to individuals and to society in general will be greater. They will more than justify the efforts of all conservationists. And the nation cannot but gain immeasurably in more constructive lives, more productive lands.

We already have some experience to build on. The Civilian Conservation Corps of the 1930's is a practical example of what has been done in solving a somewhat similar problem of that period. The CCC with its far-reaching accomplishments has never been completely evaluated, nor fully appreciated by the mass of American people.

Present need, however, is not to duplicate the CCC, but to draw on its experience in solving the more complex problem of today. Then there is other experience to draw on. Since CCC days, state and federal conservation and prison authorities have had some experience in using prison labor in conservation work. Resulting improvement in both human and natural resources has been gratifying. Yet this experience has not been applied on a scale any-

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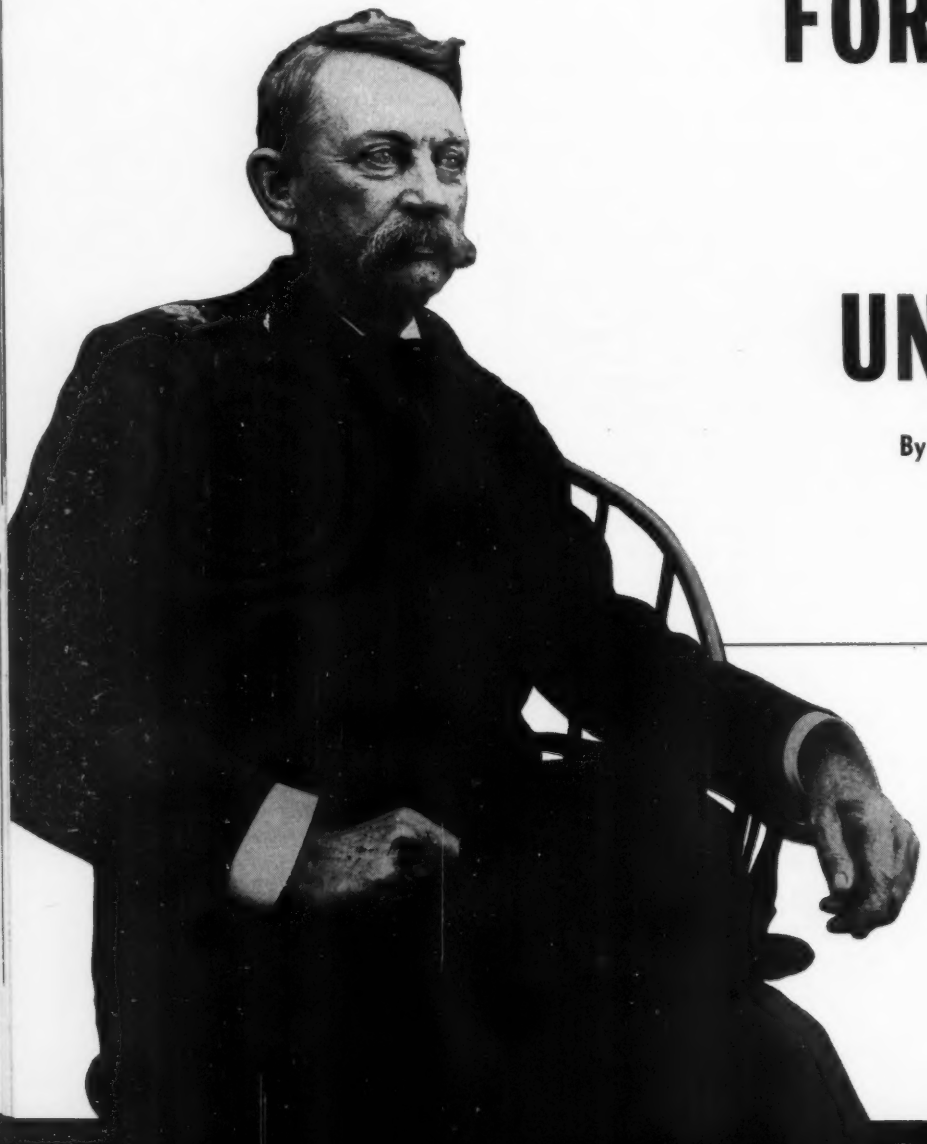
Russian forester (right) with female "brigade leader" at state forest tree nursery in the Ukraine, which supplies seedlings for collective and state farms

Sharp native knife hangs from belt of forester of Forest Department, Malaya. Department has 14 state divisions with professional and technical personnel

FORESTERS IN UNIFORM

By HENRY CLEPPER



Joseph T. Rothrock, Commissioner of Forestry in Pennsylvania, 1895-1904, wore the first official forestry uniform in the United States

Yugoslavian forester wears field uniform of Forest Service. Professional education in forestry for government service is offered at Univ. of Zagreb

Field uniform of the Italian Ministry of Agriculture and Forestry. Officers of rank have three uniforms—for dress, for ordinary wear and for field work

The *Forstmeister* of the Federal Republic of Germany's Ministry of Food, Agriculture, and Forestry has a position similar to American forest supervisor

Royal Danish Forest Service is considered small by our American standards, but it has a highly trained and widely respected corps of forest officers

Officers of Royal Swedish Forest Service are highly regarded by foresters everywhere, both for their scientific training and administrative competence

An *inspecteur* in the handsome uniform of French Department of Waters and Forests. Foresters receive their training at the National School located at Nancy

IT is a widespread but erroneous belief that the U. S. Forest Service was the first governmental forestry agency in America to adopt an official uniform. Actually, the first uniform was worn by an officer of the Pennsylvania Department of Forestry (now the Department of Forests and Waters), as the accompanying photograph of Dr. Joseph T. Rothrock will prove.

In 1904, Dr. Rothrock, Commissioner of Forestry in Pennsylvania, was photographed wearing a blue, semimilitary uniform. It was a specially designed uniform with special insignia—an oak leaf and acorns on each shoulder board, and an oak leaf inside a keystone on each of the coat buttons. Although subsequently discontinued, this was an authentic official uniform of a state forest service and, in the absence of record of an earlier one, must be considered an American first.

Parenthetically, Dr. Rothrock was a physician, botanist, explorer, and served as a Union cavalry officer during the Civil War. As early as 1881 he was learning about scientific forestry from observation of the well-managed forests of Germany. Appointed in 1895 as the Keystone State's first commissioner of forestry, he served with distinction until 1904, and his memory is revered as the "Father of Forestry" in Pennsylvania.

During my search into the origins

A forest ranger on patrol duty on a national forest in New Mexico a quarter of a century ago, wears a uniform, which, with slight modifications persisted into the 1930's. The first official uniform was adopted by Forest Service in 1908

This photograph shows that the influence of the "cow country" is still very much in evidence in the attire of the western rangers of U. S. Forest Service

The late F. A. Silcox, chief of the Forest Service, 1933-1939, in the uniform of that period

and development of American forestry uniforms, I sought out Charles E. Randall of the Forest Service's Division of Information and Education, whose knowledge of the service is encyclopedic. Because the intelligence he rounded up is not only factual but contains a touch of humor, it is worth quoting:

"The first official adoption of a Forest Service uniform, so far as I can discover, was in 1908. A memorandum of November 27, 1908, signed by C.S. Chapman, assistant forester, approved four styles. The specifications were adapted from the Army. The Fecheimer Company (way back then) was authorized to make and sell the uniforms to forest officers.

"There was a lot of squawking from western field men, who generally preferred their native cow-puncher outfits, and many continued to wear Levis or such. Apparently the 1908 order didn't last long, or wasn't widely followed.

"Discussion and debate within the service continued for years as to what kind of uniform we should have, or whether forest officers should wear any uniform at all.

"A 1916 edition of a privately printed foresters' handbook said that the Forest Service was then considering adopting an official uniform. It seems, however, that some kind of uniform specifications were in effect on an optional basis off and on during the years from 1908 up through World War I.

"In 1919, I myself purchased, at a Los Angeles sporting goods, saddle and harness store, a pair of leather puttees which were said to be 'Forest Service regulation' puttees. (I still have these tucked away somewhere, and will be glad to hunt them up, and model them for you, if it will contribute to your understanding of the matter under discussion.)

"I haven't been able to find any order, manual regulation, or other action that set up the Norfolk-jacket-type uniform we remember in the 1920's, but it must have been soon after World War I.

"New uniform specifications were adopted in 1931, slightly modifying the earlier specifications of the Norfolk type mentioned above.

"In the mid 1930's, a uniform committee spent two or three years developing the new 'forest green

Field uniform of California Division of Forestry modeled by D. E. Knowlton. For dress, doublebreasted coat is worn

Uniform for forest fire personnel for New York Div. of Lands and Forests, was adopted in 192

District Ranger William Duncan of Pisgah National Forest wears the present-day official uniform of the Forest Service

The regulation Forest Service field uniform with cruiser's jacket worn by LeRoy Sprague, ranger, Boise National Forest

The cap, blouse, and pants of ranger are adapted from the regulation uniform for use with either skis or snowshoes

National Park Service uniform was adopted soon after creation of Service, 1916. Slacks replaced riding breeches, 1940

heather' uniform style that is still in use today. The new uniform style, with soft hat, was adopted in 1935. The new fabric was adopted by the uniform committee in 1937. There have been some additions, slight changes, and modifications in the specifications from time to time since."

The old-time American forester may have preferred the more casual clothing of the cowboy, the logger, or the woodsman to a uniform, but he generally wore the official garb with pride. In the book *Forest Fire and Other Verse,* now long out of print, edited by the popular forest officer John D. Guthrie, is a bit of verse about one Arthur Magee, "who was a forest ranger and a Ph.D." The epitome of all rangers everywhere . . .

"Arthur's heart was ever warm
As it beat in the Service uniform
That he kept well pressed and always neat
From his Stetson hat to his well-shod feet."

The National Park Service has had an official uniform of some sort almost from the establishment of the service in 1916. To the millions of visitors to our far-flung national

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The latest state forestry department to adopt a standard field uniform is that of Oregon. Adopted March, 1958

District Forester Carl Lucas wears summer field uniform of W. Va. Div. of Forestry. Jacket is worn with uniform

North Carolina, unlike most states, purchases official forestry uniforms, and they remain the property of the state

District Ranger Lloyd K. Boe in field uniform of Minnesota state forestry dept. Uniforms have been official since 1956

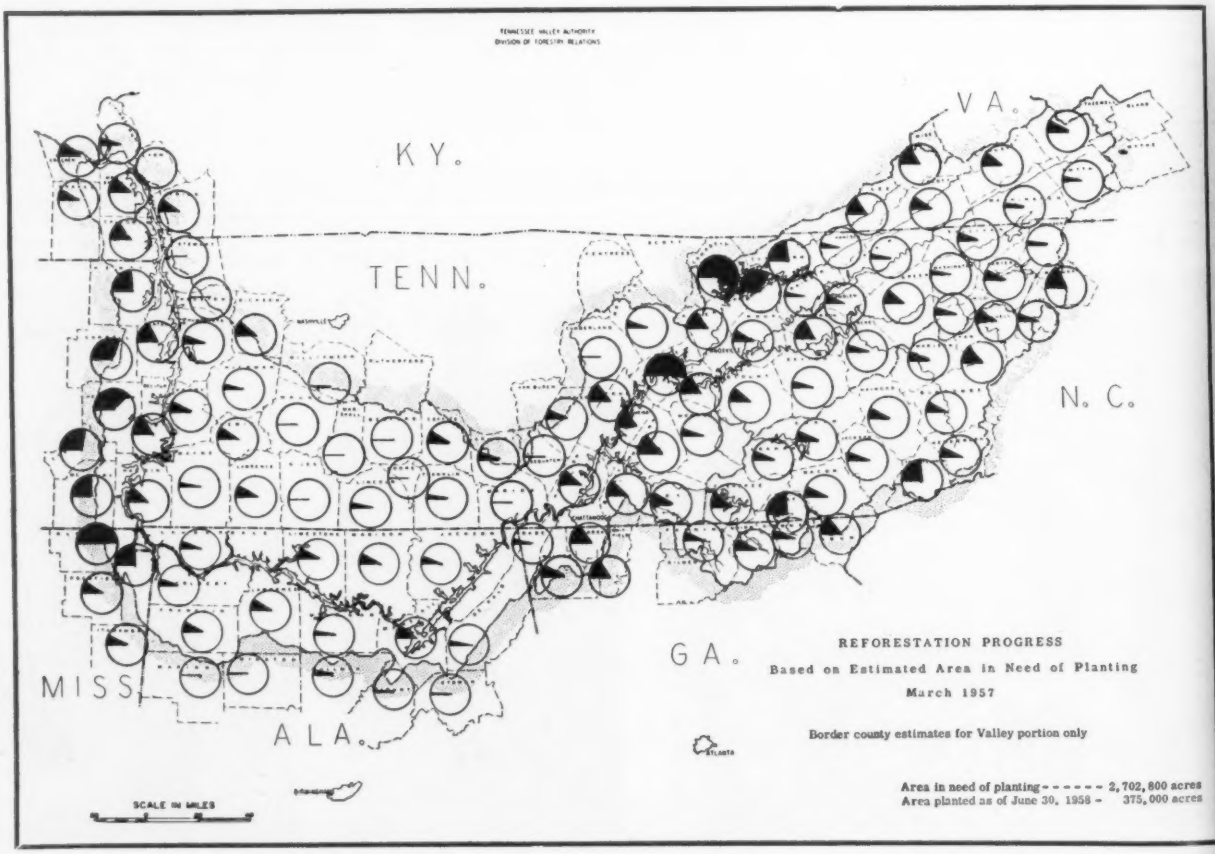
Since 1934, Muscle Shoals and Clinton nurseries have produced 427,817,500 seedlings

AUGUST, 1958 marks the 25th anniversary of forestry work in TVA. To better understand these forestry activities, it helps to know something of the larger program and organization of which forestry is a part.

The TVA Act became law on May 18, 1933. Its preamble, outlining objectives, reads as follows:

"To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said Valley; to provide for the national defense by the creation of a corporation for the operation of government properties at and near Muscle Shoals in the State of Alabama, and for other purposes."

25 FOR



The Tennessee Valley Authority is a corporation of the federal government, headed by a board of three directors, each appointed by the President for a term of nine years.

The Tennessee Valley covers an area of 41,000 square miles—26 million-plus acres—in parts of seven states. The TVA power service area, extending beyond the watershed, includes about 80,000 square miles. TVA's fertilizer testing program is active in 31 states.

The agency has built 20 dams and seven major steam plants. Now under construction are seven new power units at existing generating plants and a new $35 million lock at Wilson Dam.

Dams on the main river and tributary streams have a flood storage capacity of nearly 12 million acre-feet. Without the regulation they have provided since 1936, when Norris Dam was completed, flood stage at Chattanooga would have been exceeded 30 times. These floods included the biggest flood in 90 years and the second highest on record. The average annual value of flood regulation is estimated at $11 million. This includes benefits to lands along the lower Ohio and Mississippi Rivers, in addition to benefits in the Tennessee Valley. Some $120 million in flood damages have been averted at Chattanooga alone. TVA's investment in flood control facilities amounts to about $184 million. In 1953, TVA started working with towns and cities in an effort to analyze and alleviate local flood problems. Since then, some 26 communities have received technical help in developing plans for minimizing the effects of floods.

TVA

By RICHARD KILBOURNE
Director, Division of Forestry Relations,
Tennessee Valley Authority, Norris, Tennessee

About 800,000 viewed fire prevention movie programs in rural areas

In the valley, 45,000 land owners have reforested 375,000 acres of idle or eroded land

Willis M. Baker served as director of TVA forestry activities, 1938-54

Present forestry director, Richard Kilbourne, succeeded Baker in '54

While TVA encourages maximum use of the impounded lakes for recreation, it does not operate any recreation facilities. These are operated by states, communities, and private interests. TVA has provided the land for 12 state parks, 55 local parks, over 250 public access areas, and about 350 boat docks, and in addition has transferred several thousand acres to the Great Smoky Mountains National Park. The value of recreation improvements and equipment along the lakes now exceeds $72 million. Use of these recreation facilities in 1957 was estimated at 33 million person-days.

In the early forties TVA began setting up a series of small watershed projects as demonstrations of the value of an integrated approach to small watershed development under state leadership. Included also are research projects directly related to problems of tributary watershed development. The forestry division participates in the research and demonstration phases of this program.

Forestry work was started in August, 1933, with the appointment of Edward C. M. Richards as chief forester of the Forestry and Soil Erosion Department. In October, 1933, a planting section was organized, with G. H. Lentz in charge. Its first duties were to provide technical supervision in erosion control and reforestation for 25 Civilian Conservation Corps camps. By the end of the first fiscal year (June, 1934), there were three sections—soil erosion and reforestation, forest lands, and forest investigations. Mr. Richards resigned in January, 1938, and was succeeded by Willis M. Baker in June, 1938. Mr. Baker retired in April, 1954.

The present-day Division of Forestry Relations has three branches—Forestry Investigations, Forest Development, and Fish and Game—and an Administrative Services Section. We have 42 professional foresters and six professional fish and game technicians. Annual personnel number about 80, with an additional 40 to 60 temporary employees, mostly laborers employed seasonally at our two nurseries.

The TVA is charged with responsibility for fostering and assisting in the integrated development of all natural resources of the valley. And it was directed to do the job cooperatively with state and local agencies.

On the basis of economics alone, there are compelling reasons for forest development in the valley. These forests, adequately protected and wisely managed, will supply the raw material for a billion-dollar-a-year industrial output. They will make jobs for 200,000 persons and support a $500 million payroll.

One of the first jobs was to find out the nature, extent, condition, and use of the forest resource. We made valley-wide forest inventories in 1940 and 1950, using data from our own surveys, from the U. S. Forest Service surveys, and from other sources. We hope to repeat this kind of analysis in 1960.

In addition to looking at the valley as a whole, we have completed forest inventories in 56 counties and seven small watersheds on a schedule designed to cover all valley counties in 10 to 15 years.

In 1954 we completed a survey of forest management on private lands which revealed the extent of management and its effectiveness in improving the resource.

In addition to the county surveys, we have also inventoried groups of counties or timbersheds around wood-utilization centers. We have made forest products industry surveys, analyses, and reports.

The 125 counties drained wholly or partially by the Tennessee River system contain approximately 20 million acres of forest land, of which 17.4 million acres are privately owned. In the watershed proper, comprising some 26 million acres, 14 million acres (54 percent) are in forests. Private ownership accounts for 11½ million acres, public ownership for 2.6 million. Forty-six percent of the private forest area is in ownerships of less than 100 acres. Private forest landowners number about 245,000.

One of our earliest forestry efforts was to help the states and counties get on top of the fire problem. Working through the state foresters, we held 6,500 educational meetings between 1934 and 1942. Total attendance was nearly 800,000. These meetings featured motion pictures and emphasized fire prevention. They helped lay the groundwork for extending organized state protection.

As a result of a lot of hard work on the part of the state forestry organizations and good support from the Forest Service under the Clarke-McNary Act, fire protection has now been extended to 111 of the 125 valley counties, covering 95 percent of the forest area needing protection. And all of the 111 counties cooperate financially.

We are continuing to work on the extension of protection in the hope that in the next few years we will have valley-wide coverage. As a regional agency, we have been able to help persuade many people to participate in state protection programs.

We also try to help improve the quality of protection. To this end, we have helped the states finance and conduct 10 intensive short-term projects. Projects in Cumberland and Morgan counties, Tennessee, and in the Chattanooga area, were designed to determine fire causes as accurately as possible. We have worked with the states of Virginia and North Carolina on intensive projects in prevention. Our most recent cooperative project was with North Carolina. Here we have just completed a joint study on the point of diminishing returns for public expenditures in fire control.

Woodland grazing poses another serious protection problem in the valley. Some 15 per cent of the forests in the valley suffer from this type of damage. We are currently engaged in projects to help correct this situation, and find the state extension services and the dairy industry very much interested in cooperating.

A major problem in the valley area, particularly on small woodlands, is overcutting and high grading.

While our 1954 survey indicated only 12 percent of the private forest lands satisfactorily managed, we are certain this figure is higher today. We hope to make a re-analysis in 1964.

Our approach to management has included many types of activities, but major emphasis has been on woodland management demonstrations. We use the case approach rather than the technique approach. With state agencies, we have investigated at least a thousand possibilities.

Some 300 cooperative demonstrations, covering over half a million acres, have been established. These are continually being used as working examples of practical woods management. The results have been summarized in reports which have been widely distributed. The owners have been most effective in telling other landowners about their forest management experience. In addition, we have helped stage 156 timber harvesting demonstrations for 9,700 people.

Recently we completed a study of the influence of woodland and owner characteristics on forest manage-

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Reading about RESOURCES

By MONROE BUSH

ON LAND AND SEA

IF anything were more difficult to review than one magazine, it would be ten—and that is essentially what **Land** is, the 1958 Yearbook of Agriculture (U.S. Government Printing Office, $2.25). Veteran editor Alfred Stefferud (see *American Forests,* April, 1958) has gathered into ten sections 69 separate articles by almost 100 authors.

This is a veritable grab-bag. Its land-resource and land-use subjects range far and wide between the geographical extremes of Puerto Rico and Alaska. Some pieces are perceptive and provocative, others merely pedestrian. The over-all quality is as good as that of a substantial textbook.

What is most lacking is unity. Stefferud has put together an anthology—and anthologies are built that way: they are put together from, they do not grow out of, their subject. And in his great editorial skill, he has woven a pattern of material that has one subject, land. Yet this single subject is dissected in 69 separate pieces, each by a competent author, but each by a different author.

Therefore, this is no book to read from cover to cover. But as a reliable reference volume, as an introduction to 69 aspects of land resources and management, it will be read and readable for years to come.

The American Oasis, by Edward Higbee ("Reading About Resources," July, 1957), is a far more incisive—though necessarily more selective—survey of land resources. **California Lands,** by Dana and Krueger ("Reading About Resources," August, 1958), has real depth, with its exhaustive examination of land management problems within a limited region. Both are better books than **Land,** yet neither is a substitute for what Stefferud and his colleagues have done. There was a place for an encyclopedic introduction to the subject of land, and this book fills that place with honest distinction.

If there is any real criticism, it is found in the absence of a tying-together, of a close-knit conclusion, to the articles. This may be an unavoidable lack in a government publication, however. Such a book cannot stand on its hind legs and fight for a policy; and short of this, Stefferud has done all that could be asked.

The problems of land management pale into insignificance, however, in comparison to the difficulties that are encountered in every effort to utilize the resources of the sea. Since the gray dawn of civilization, men have risked life and limb to grasp a part of their food from these vast waters. And despite advances in both oceanography and marine biology, we know less today about the oceans and their life than primitive man knew of the soil which he broke with a wooden hoe.

With the limits of the land in sight, the world's mounting hunger will increasingly demand, however, that the miracle-team of science, technology and capital buckle down to the long grind of learning something about the resources of the sea. Largely by trial and error, fisheries have been sustained in a mere handful of locations. There has been insufficient know-how and leadership to broaden the scope of this world-wide industry to other areas of the oceans, or to other species of marine life that are now ignored.

Here is a resource challenge of unparalleled urgency, now spelled out in brilliant detail by Dr. Lionel A. Walford in his new book, **Living Resources of the Sea** (The Ronald Press, N. Y. 1958. 321 pp. $6.00). Written under the aegis of the Conservation Foundation, it is a ringing, undeniable, unforgettable call to face this challenge of the sea for what it is: perhaps man's last best hope to overcome the creeping starvation that eats at the spirit of the human race.

The sub-title of **Living Resources of the Sea** is "Opportunities for Research and Expansion"—and that is exactly what the book delineates. Dr. Walford does not attempt to summarize present knowledge, or present utilization, beyond what is necessary to throw into sharp relief the yawning ignorance which surrounds us on every hand when we consider the sea.

He impresses upon us the ten thousand unanswered questions concerning the constantly changing environment of any location in the sea; he insists that we must learn far more than science now imagines in regard to the species of marine life, their feeding and reproductive habits, the diseases to which they are subject, the migrations they undertake, the factors in the pressure of natural mortality.

But this is not all. We have got to discover what nutritional contributions the countless species of marine life can make to human sustenance; we have got to learn how these species can be harvested in sufficient quantity and at low enough cost to make the project

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Spruce Gumming IN NEW ENGLAND

By J. ALMUS RUSSELL

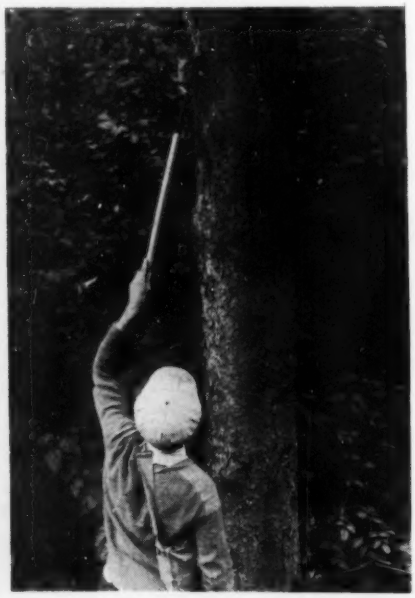
DELICATE as a pigeon's wing, as soft as a fox's nose, and as tangy as a jack-in-the-pulpit is a woodsman's description of spruce gum, one of New England's once famous but now nearly forgotten woodland products.

Until 1850, spruce gum, as harvested from black, white, and red spruce trees, constituted a thriving regional industry. Maine refiners alone sold an average of 100 tons a year, bringing in at one period as much as $300,000. As the demand for this product grew, such gum became both scarce and costly. For that reason, chicle was introduced, at once became popular, and soon supplanted the native article.

Now this industry has all but disappeared. Only one Maine firm continues it, processing but 800 to 1000 pounds annually. The rocklike pieces of gum sell for eight dollars a pound to drug stores, gift shops, and gourmets.

Spruce resin flowing through the sapwood ducts of the tree seeps out to the surface of the bark and tree wounds. Frost cracks, man-made blazes, scars resulting from logging operations, and hungry porcupines gnawing the bark, all cause openings from which the pitch drips out.

Woodsman gathers spruce gum with converted hoe. Gum poles were usually 50 feet long, with a chisel-like knife attached to top. Cup was fastened to pole to collect gum after being loosened with the knife.



Refined gum is poured on marble slabs. As it cools, processor rolls the gum into strips 2″ x 24″. Strips are marked so that each stick will be three-eighths of an inch thick. Breaks easily when completely cool.

In the spring this gum begins to flow, increases its activity in the heat of summer, and hardens into thick, sticky masses in the fall.

Very often the gum extrusions extend twenty feet or more, from the bottom of the tree trunk well up into the branches. Sometimes a crack in the bark or an extended scar made by lightning makes a natural channel.

Gum collections may be carried on during most of the year, but conditions for gathering nature's chewing gum are most suitable in late autumn and winter, when the resin can more easily be chipped from the trees in the mountain forests. If the gum is left undisturbed for some years, the moisture evaporates, and it hardens into a crystal-like resin, not unlike pieces of milk amber. Sometimes, in true amber style, an insect is even imbedded in the gum.

In some spruce forests, large blazes purposely forced the resinous sap to "weep," leaving nubbles of gum varying in size from that of a pea to that of a Seckel pear. Logging operations, of course, offered a considerable chance for bark injuries.

Lump gum was often used as gathered. This was known as "tit" or crystal gum. Chip gum was cleaned by steaming and straining. Some trees yielded as much as four pounds of gum of both types, and a good woodsman might collect as much as 45 pounds a day.

Spruce gum was hand-gathered by means of a homemade instrument commonly called a gum pole. Such a pole was made of lightweight balsam wood, twelve to thirty feet long, with a V-shaped knife fastened to one end of it. Surrounding the knife was a tin can or metal funnel also attached to the pole itself. The end of the metal container was open so that the gum-blister or "tit" would drop into the can when loosened with the knife. Hatchets were also used to gather "nuggets" of gum lower down on the tree trunk.

As the gum tree was sometimes three logs high before the branches started, even the longest poles held in the hand did not always permit recovery of all the gum.

When the gum-gatherer had filled his can, he dumped the contents either into a metal receptacle or a canvas bag. Masses of gum were placed in cloth bags which were heated in a washboiler of hot water until their contents softened. A small amount of balsam gum was added to soften it and make it less brittle. The bags were then removed and squeezed between two flat narrow boards hinged with leather at one end. This process clarified the gum, leaving the impurities inside the cloth.

For individual use the refined gum was poured into small wooden containers similar to miniature napkin rings with bottoms. For commercial use the gum was emptied into pans of two or three gallon capacities. When the gum had partially cooled so that it might be easily handled, the processor rolled it out on a stone slab in a mass two feet long and two inches wide, using a thin slab for cold weather, a thick one for hot. This mass he divided with a zinc marker into pieces three-eighths of an inch thick.

When the pieces were entirely cooled, they were easily broken away from the parent sheet of gum, wrapped in red, white, and blue paper, packed in boxes of 150, and sold wholesale for seventy-five cents a box, or half a penny each. These sticks, in turn, the merchant retailed for a penny each, a 100% return on the transaction.

In the modern method of refining gum, the gum is heated with steam at five pounds pressure. In its liquid

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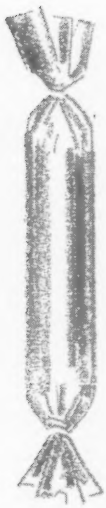
Sticks of gum are packed 150 per box with guarantee, "$500 will be paid to anyone analyzing this gum and finding it impure." This wrapper has had no "takers." Sticks are wrapped in red, white, and blue paper.



Boxes, packed with 150 sticks, were sold to country stores for 75 cents. The stores made 100% profit by charging one cent a stick. Modern chewing gum and diminishing supply of gum makes product scarce.

Industrial Forestry and Public Relations

By FREDERICK BILLINGS
Clemons Operation
Weyerhaeuser Timber Company

IN a recent issue of the *Journal of Forestry*, Mr. George Garratt, Society of American Foresters president, pointedly examined the condition of forestry's reputation in our nation today. The status of the forestry profession, Mr. Garratt wrote, fails to reach the level of public regard enjoyed by the doctor, the engineer, the lawyer.

Part of the fault for this distorted picture, Mr. Garratt believes, rests with the forester himself. Although his training gives him silvicultural theory and facts, the forester has had his nose so close to the grindstone he has had little time to explain his accomplishments to the public. With millions of forested and unforested acres throughout the land to take care of, the men in a young profession have tackled resource problems pretty vital to our nation. First came protection, then forest inventory, and now the matter of re-forestation and the business of assuring permanent productivity of forests as living, dynamic units giving repeated crops of wood. Foresters, for the most part, have been busy in the forests—and alone in the forests. They have not been able to establish a level of high public regard because they have not been in public touch.

And what about the public itself? Does it know what forestry is? What it means? What its work includes? Our population is increasing at a fantastic rate. With all of the advances in forestry, have we kept pace with the population in telling the story of professional competence? No. Does the public realize that foresters, as a group, are dedicated to the highest practical use of forest lands regardless of ownership? No.

These negatives serve mainly to identify our problem more clearly. Certainly each of us knows what can be done when the public is made aware of our activities and our needs. The "Smokey Bear" program of the U. S. Forest Service, together with industry's "Keep Green" campaign have worked to bring amazing reduction in man-caused forest fires. Fire is like sin and everyone is against it—now that we have taken the trouble to inform the public, we have found more friends than we thought we ever had.

Even more friends have been gained for the cause of forestry through the campground developments maintained over the years by the Forest Service.

Forestry is a young profession and industrial forestry is even younger. Our nation's first industrial tree farm was formally dedicated in 1941. Since this dedication at Clemons in Washington state, the tree farm program has spread throughout 45 states. In these states some 46 million acres of privately-owned, tax-paying lands have been voluntarily dedicated to growing timber on a sustained cropping basis.

Industrial foresters know that, in addition to helping keep the "wood bin filled," tree farms contribute other important benefits to both man and wildlife. Multiple land-use principles are the foundation of tree farm practices.

Today's forestland owner, first of all, keeps his lands productive. Not for timber alone, but for a variety of economically worthwhile uses: to produce and build better soil, to protect watersheds, to provide room and board for fish and game, to protect man and wildlife from fire and stream pollution, and to establish recreation areas.

Forty-six million acres, from Maine to California, is an enormous recreation potential and offers our industry an excellent opportunity to let the public enjoy privately-owned

forests and, at the same time, see tree farm areas for themselves.

Since federal and state foresters operate timberlands for the people, they must work to gain not only the public's understanding, but its support as well. Likewise, the industrial forester in business operates by public consent. He knows that through people can come the best backing his tree farm can have.

The foresters charged with directing our Weyerhaeuser forest and mill operations are seeking ways to widen and improve the public's understanding of our business. *They* encourage sportsmen to visit our woods to hunt, to fish, to camp and to picnic in our forest parks. And as you well know, many other industrial forest land owners are doing the same.

Through such visits people begin to see for themselves some of the sense to phrases they have heard, read or wondered about; phrases like "second growth," "seed source," "fire break," "block harvesting," "sustained yield," "game management," and "permanent payroll."

Our company has opened its lands to hunters and fishermen in Oregon and Washington and, in addition, operates 22 free public parks for the enjoyment of today's recreationists.

At Clemons, our forestry and logging men cooperate with local sportsmen who are welcome to hunt on almost all of our tree farm lands. Engaged as we are in putting our lands into maximum production through large scale seeding, spraying, planting and other cultural practices, we are glad to have the public's help in harvesting game animals, in season, to keep the herds in balance with the winter food supply and to keep timber and game crops in harmony.

Hunting maps of our logging and fire protection roads are prepared each year by our forestry department for distribution to deer hunters. On the reverse side of the map we list a few safety cautions and point out why hunting cannot be permitted in active logging areas. We also wish the hunter "happy hunting" and ask him to come back again next year.

This same map is also published in the five daily and weekly news-

Displayed at Grays Harbor District Fair in Washington was this photo exhibit of scenes at "Swinging Bridge Park." The park has become a popular spot for local campers, sportsmen and picnickers. It is operated by Clemons Operation of Weyerhaeuser Timber Company

papers in our plant communities. Patrolling the tree farm during hunting season are foresters whose mobile radio communication makes them able to assist hunters quickly in case of emergency.

In general, vandalism has not been a serious problem. These sportsmen, including many of our company employees, recognize that hunting on private land is a privilege which they do not want to jeopardize by thoughtless acts of vandalism.

We do not stop the hunter either coming or going at the gate. When this was done, the sportsmen somehow looked on us as "policemen" and there was a much higher incidence of vandalism. By treating the hunter as an adult, we find he behaves as one. He checks in with us as he goes out the gate—not because we require it, but because he wants to have a friendly chat and tell us where he shot his buck.

While hunting brings more people on tree farms than fishing, several of the company tree farms receive a rush of fishermen early each spring prior to fire season. For example, at Vail the main road up the Skookumchuck is opened on week ends, and many fishermen use the area. Side roads are posted. Cooperation has been excellent.

Two years ago, the Clemons Operation began development of a simple park situated on a wooded point of the Satsop River. Added to the advantages of a natural bend in the river was a thirty-year-old swinging bridge across the stream, a foot bridge suspended from wire cables. Second-growth timber of several species blankets the area and the swimming and fishing are as good as anywhere in the county. Foresters and loggers cleared away the debris. Parking and playfield areas and picnic tables were installed, along with a few fireplaces, during the first year. Rest rooms and trash receptacles were maintained, but the spot was not elaborate.

Since the park is on a dead-end county road ten miles off the main highway, some wondered if campers and picnickers would bother to travel to such an out-of-the-way place. We found out! The park—called "Swinging Bridge Park"—in the first summer proved more popular than even the most optimistic of us imagined. Sunny, summer weekends find fifty to sixty-five automobiles parked in the area at one time. We added an open-sided covered kitchen this spring, where campers and picnickers may make their coffee and cook hot dishes on a large wood stove. Additional tables and six teeter swings were installed for youngsters.

Although we did not know it at the time of installation, the cement floor of the cook shelter serves well as a dance floor for several square-dance groups who have picnicked at the park. Church, civic, Boy and Girl Scout groups have also used the park for group outings.

Local families, including many company employee families in nearby towns, are streaming to the park and we are glad to have them. The park is proving to be one of our best community efforts.

While relaxing, people from these local communities are becoming better acquainted with our industry and some of its problems. A friend of mine who frequently camps with his family at the park told me this summer that the moment he begins the ten-mile drive off the main highway into the park, he has to forget about smoking because his grade-school-age daughter lashes him with such comments as, "Don't you know you are not supposed to smoke in the woods, Daddy?" She is so persistent that he must wait until they are at water's edge for their swim before she will permit him to have his cigarette.

A simple incident by one child at one park. Yet, multiplied by the many children who visit many tree farm parks over the nation, this is how everyday forestry practices get across to people in terms they can understand.

Another of my experiences at the time I worked in Oregon gives a picture of the way some people view industry and how these impressions can change through a woods visit.

I arranged a field trip through the tree farm for the graduating class of a nearby high school. Following a tour of newly-seeded sections and inspection of beautiful thirty-year-old second-growth fir stands, we played games and ate a picnic lunch at a company park on the banks of the Calapooya River.

As we were cooking hot dogs at one of the fireplaces, an alert-looking boy asked, "This is a reserved area set aside for Weyerhaeuser employees only, isn't it?"

I replied that the park was maintained by the company for all people, employees and others alike.

"Golly," was his reply. "I never realized a company as big as Weyerhaeuser could be as interested in people as in trees!"

The priority tree farmers assign to recreation meets not only a significant industrial need, but also helps to serve a vital national need. Our nation's population is rapidly shifting to huge metropolitan areas. More and more of us may be working and living in and near big towns, but we do not play or vacation there. Shorter working hours, longer vacations, together with the mounting tensions of Atomic Age living, are sending people to the peace and quiet of the woods—by the millions!

Our national park system was designed to handle 25 million people a year. Last year 59 million visited these parks. In 1926 the U. S. Forest Service had 6 million visitors— in 1956 nearly 56 million people visited these recreation areas. Last year our state parks recorded 216 million visits.

This year a nation-wide survey was completed by an industry association, American Forest Products Industries, Inc., and revealed, in detail for the first time, the extent to which the forest industry is opening up its lands to the nation's recreationists.

In making public its findings, A.F.P.I. said the survey covered three-fourths of the commercial timberlands in this country.

Some timberlands must be closed to the public for fire and logging safety, but the study reflects a spectacular contribution on the part of 455 companies covered in the industry's contribution to the country's growing recreational needs.

More than 42 million acres (or 93 per cent) of the total area covered in the survey are open to hunters in season. Forty-five million acres (96 per cent) are open to fishing. There are 55,928 miles of lake and stream banks within these lands from which anglers may cast their favorite lures. I won't use all the figures. You've all seen them. They're impressive.

Sixty-five companies have established public parks. Common recreational facilities are provided at most of these parks. Thirty-one companies employ game management specialists to work with hunters and fishermen to improve the game-fish supply.

Thirty-two million acres of these private lands are open to hunters and fishermen without permits. An additional nine million acres are available to all with permits. Big game opportunities lure many to tree farms annually and an average year sees a harvest of 127,000 animals.

Talcott Brothers load 4,500 bf of logs on their truck in less than 20 minutes. Former method required up to two hours.

How double-duty TD-9 Skid-Grapple helps logger-ranchers prosper!

Operating near Glide, Oregon, brothers Neil and Watson Talcott used to handle logs "the hard way."

Using a block-and-tackle and an old crawler, they needed up to two hours to load 4,500 bf of logs on their trucks. Now, with their International Drott TD-9 Skid-Grapple, they do the job in 15 to 20 minutes!

Using the TD-9 Skid-Grapple to skid logs, and load, too, this brother team has their second truck-load of logs "wheeling" to the mill by early afternoon—instead of after sundown. Production: 9,000 bf in a "long" half-day!

"The TD-9 Skid-Grapple has speeded up our production remarkably," report the Talcotts. "We take advantage by working fewer hours in the woods and giving our ranch work the attention it needs.

"Before, with the two of us felling, bucking, skidding, loading, and hauling to the sawmill, it was back-breaking dawn-to-dark labor. Now, the Skid-Grapple does most of the hard work. We make more money and take it easy."

Here's the Talcott's TD-9 Skid-Grapple with "both ends busy"—speeding logs to the truck. International Drott Skid-Grapples come in models matched to your requirements.

Prove the profit advantages of minimum crew operation—using the bonus-powered International Drott Skid-Grapple to skid and load logs. Compare exclusive top grab-arm action for positive load control and operating ease. See how exclusive Hydro-Spring swallows shock, protects equipment. See your International Drott Distributor for a demonstration.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

To better the lot of the nation's fishermen, 22 companies are engaged in stocking of streams; 41 others are taking steps to improve fishing on lakes and streams within their timberland properties.

A million and a half people used tree farms for recreational pursuits (hunting, fishing, camping, picnicking) in 1956.

This, then, shows the recreational aspect of multiple-use forest principles being practiced in industry today. In these camping and picnic areas the emphasis is shifted from harvesting timber for lumber and pulp products to providing for out-of-door retreats for people.

In addition to losing the land for manufacturing purposes, the crews who perform the necessary labor, together with materials needed, make such parks a large investment. You cannot put a dollar value on a man's enjoyment of a day in the woods, but it is certainly worth a lot to him in terms of relaxation and escape from his day-to-day pace of living. And it is worth a lot to us to have him enjoy himself on our lands. In this manner we are concentrating our visitors in well-organized areas, reducing the wear on our logging roads and minimizing the fire risk. And we are shaping the pattern for a tremendous influx of recreationists from now on. For as F. K. Weyerhaeuser admonished the foresters in Washington state just last fall: "The professional forester, whether he is managing private or public lands, must become an expert in handling people and game, as well as trees. He will increasingly find himself dealing with great numbers of city-bred Americans who feel that urge to seek the wilds, to hunt, picnic, fish, or camp."

In order to strengthen and advance forest recreation as a lasting multiple-use practice, many companies have adopted company policies on recreation. Let me read you our company's policy on this subject:

"Although the primary use of the forest land is for the production of timber, it is company policy to make the land available for secondary uses which are not detrimental to the maximum growth of new tree crops.

"Recreational opportunities shall be offered to the public through the use of designated tree farm areas for campers, hunters, fishermen, and other recreationists. The use of these areas shall be limited only as necessary to avoid fire, injury to employees or the public, or damage to the timber crops, roads or equipment.

"Whenever possible, sites of historic interest or outstanding scenic beauty shall be preserved for public enjoyment.

"The company shall cooperate with groups interested in promoting recreational use of forest land in developing programs for the proper use of the designated areas.

"Extending to the public the privilege of use of company lands for recreational purposes will help to achieve a better understanding and appreciation of the benefits to be derived from sound forestry management of privately owned timberlands."

Our tree farms and the nation's tree farms are operated by foresters who practice multiple-use principles that best benefit all phases of forest land activity. The tree farmer's gates from Florida to Washington state are open to the recreationist guest. Yes, the gates are open, and the lock has been thrown away.

In mentioning earlier Mr. Garratt's observations on the need to lift the level of recognition for the forestry profession, we saw that foresters have too long talked mainly with foresters about forestry. With more people visiting our forests each year, we are given an opportunity to define what forestry means to our nation — and each year to more and more people who are actually visiting the woods.

We have learned that this program, which might appear to be somewhat altruistic, in reality gives us our best method of letting people know the value of forests as well as the need and means of protecting them.

The priority given recreation long ago by the Forest Service, together with industry's fast-growing program, offers us our greatest opportunity to win wider public understanding through winning friends. On how we manage public recreation on forest lands, private and public alike, in the years ahead hinges the best support forestry can get: the support of people.

Society Meets at Salt Lake

(From page 8)

of our land is destined to be put to some human use. If we want wilderness we shall have to set aside definite areas deliberately for that purpose. Only those areas that are deliberately set aside as wilderness and positively protected as such can be expected to remain wilderness. This is a governmental undertaking, of course, in our society, and because most of the lands now available are federal lands, this must be largely a federal program. So we need a national policy and program. Yet within none of the areas where wilderness still exists is it protected as wilderness by Congress. There is no law establishing a national wilderness preservation policy, nor any statute authorizing a national wilderness program."

Another opposition speaker was George A. Craig, San Francisco lumberman. He observed that "foresters are capable and trained to take care of wilderness. They should be given the opportunity to use their tools and knowledge. The bill would hinder preservation of wilderness areas."

Multiple use programs came up for an airing at another session of the society's meeting. Fred J. Sandoz of Springfield, Oregon, pointed out that commercial lumbering interests' greater sense of public responsibility and duty is manifest in the rapid spread of multiple use forestry on commercial tree farms. "Water conservation, propagations of game animals, birds and fish, better livestock grazing, and recreation are all by-products of the new look in commercial forest management. Roads are the key to multiple use," he said, "and timber builds roads."

" 'Multiple use' has become a popular term somewhat like the word 'conservation,' " according to Donald E. Clark, regional forester for the Forest Service at Denver, "but to different people, multiple use connotes different meanings. Multiple use may mean timber first, or grazing, water, minerals, wildlife or recreation. But to the national forest manager a broad and forward-looking concept of multiple use is essential."

Although several different approaches to the multiple use program were suggested, the speakers agreed that it is the responsibility of the forester to provide maximum forest use for a maximum number of people.

The Truth About Chemical Controls

(From page 13)

arise. Though insect diseases sometimes are important in the control of forest insect outbreaks, as yet we know very little about how to produce them artificially in large quantities and how to apply them effectively from airplanes to control epidemics. However, preliminary results in this field are most encouraging.

(3) *Silvicultural control.* The manipulation and improvement of stands by controlling the composition of tree species in the production of insect-proof forests have great possibilities. It is a long-term approach to the problem.

(4) *Chemical control.* Today the greatest reliance is placed on insecticides for the control of forest insects when they become epidemic in inaccessible areas, although sometimes a combination of control methods is used. The use of insecticides presents certain hazards which must be weighed against the advantages.

The following important values of the forests must be considered: (1) Our country depends on the trees for many wood products; (2) they provide clean water for irrigation and hydroelectric power and to fill industrial and domestic water needs; (3) they contain meadows and grasslands for the grazing of domestic livestock and wildlife; (4) they provide suitable environments for the fish and wildlife sought by many of the 30 million fishermen and hunters in this country; and (5) they provide scenic vistas for camping, vacationing, recreation, and rest.

Land-managing agencies are concerned with all these values and therefore have the responsibility for providing adequate protection for all uses. Accordingly, when a serious insect-control problem arises, they must consider the impact of the pest and measures for its control upon each forest use that is affected and upon the forest as a whole. Unless a spray program offers substantial benefits to all these uses it is not undertaken. Moreover, when a risk is involved in any of them, and a decision has been made to spray, precautions are taken to minimize the risk.

Effects of sprays on fish and wildlife.—The public has been poorly informed regarding the research on DDT that preceded its widespread use in insect-control programs, as indicated by the mounting reports claiming lack of research before use and dire adverse effects purportedly due to spraying. However, these claims have not been substantiated. Little recognition has been given to the intensive cooperative studies conducted by entomologists, fish and wildlife specialists, and others in federal, state, and private organizations over a period of about five years. Many of these studies were spearheaded by the U. S. Department of Agriculture and the Fish and Wildlife Service in the eastern states. In Pennsylvania, in connection with eradication of the gypsy moth, it was determined that a single aerial application of DDT at one pound per acre had an almost immediate pronounced effect upon many terrestrial insects, which was temporary, lasting about a week. Censuses by ornithologists showed that the spray was not harmful to the numerous species of birds present. Studies made on large sprayed areas in Canada also showed that this dosage was not damaging to birds.

Preliminary studies of sprayings made directly over several miles of both warm and cold-water streams suggested that the greatest hazard might be to fish-food organisms and fish. Even under such severe experimental conditions, in one stream it was estimated that only 1.3 percent of the native brook trout and less than half the warm-water fish in the lower reaches of the stream were killed. Two watersheds in Pennsylvania comprising 52,000 acres of varied habitats were treated by airplane with DDT at the one pound rate according to regular control procedures. Typically, the spray rapidly reduced the numbers and volume of aquatic insects in the streams, but none of the 14 sampling stations in the treated area were completely depopulated and losses at a few stations were small. In general, repopulation was evident after two months, and most species were in usual abundance by autumn. The great reduction in insect numbers (70 to 90 percent), did not seem to affect the condition of fish seined and examined two months later. In one stream treated for its entire length of six miles, various kinds of fish were killed over a period of one month, but the loss was small in comparison with the total fish population. In other studies, we found that some fish were killed from usual spray operations, but these losses varied greatly with the ecological conditions and were negligible in terms of the total fish populations present in the lakes and streams.

Substantial losses of fish have been reported from the use of DDT to eradicate the gypsy moth in New York and New Jersey in 1957. However, neither federal nor state officials have found this to be true. Fishery biologists state that these losses have been grossly exaggerated. A few dead fish upset some wildlife enthusiasts who do not think in terms of effects on the total population and of natural mortalities that take place continuously.

Early studies made on western streams that received DDT when forests were sprayed to control the Douglasfir tussock moth showed considerable diminution of fish-food organisms and some mortality of fish, which was not considered very damaging. Streams and lakes vary greatly in size, depth, velocity, and turbidity, all of which are related to the plant and animal life they contain. The amount of spray reaching them is also influenced by the age and composition of the forest. Therefore, it is not surprising that in large-spray operations noticeable losses of fish may occur locally. On the other hand, a stream muddied by beavers or recent rains nullifies the effect of DDT on aquatic invertebrates and fish. Observations on a small stream in Wyoming containing a series of active beaver colonies and a large population of cutthroat trout showed that only a few trout and about 50 percent of the bottom organisms were killed by experimental spraying at the rate of 2½ pounds of DDT per acre. These wide variations in effect of DDT in different ecological situations point to the need for a careful evaluation of stream conditions and fisheries resources before forest insect spraying is undertaken.

Of considerable concern are the results of studies made by Canadian workers on salmon in the Miramichi River, New Brunswick, Canada, following an application of DDT at ½ pound per acre in 1954 for the control of heavy infestations of the spruce budworm. By patrolling the

streams in sprayed areas and holding small salmon in cages, it was determined that large numbers of fish up to 2½ inches in length were killed directly by the spray. The lack of aquatic insects after the spraying may have had serious effects on the small salmon later in the season. For the first time following four years of spraying in this area, kill of small salmon was delayed 2½ to 3 months after the spraying. Studies are being continued to determine the re-establishment and volume of aquatic insects and the over-all effects of the spraying on future salmon populations. In 1957, in connection with the spraying of western hemlock in British Columbia with DDT to prevent serious defoliation by the blackheaded budworm, young salmon and aquatic insects were reported to be severely reduced in several streams.

Much publicity was given to a fish kill following the spraying in 1955 of forest land near the Yellowstone River in Montana. Because no other cause of fish mortality was apparent, it was blamed on DDT spraying for spruce budworm control. On the basis of past experience, the distance of the forest from parts of the river, and the broad, deep, and swift nature of the river, it is hardly conceivable that DDT could be the cause. No mortality was observed shortly after the spraying, but considerable mortality of white fish, trout, and suckers was reported after three months. There is no previous experience to substantiate the claim of delayed kill of large fish following exposure to DDT at the one-pound dosage.

Studies made on 13 smaller streams in the same general area in 1956 by the Forest Service, the Fish and Wildlife Service, and the Montana Fish and Game Department generally confirmed the results of studies made in the East. Aquatic insects were materially reduced by the spray, trout gorged on insects killed by the spray but did not succumb, there was a gradual repopulation of aquatic insects during the four months after spraying, and there was no indication of leaching of DDT into one stream following a good rain. These results indicate that in small streams, in which maximum damage would be anticipated, there is no delayed kill of adult fish. Investigations are under way on other streams in this region, which should lead to a better understanding of immediate and delayed effects of DDT spraying on fish-food organisms and fish.

Effects of DDT sprays on biological-control agents. — Some persons adamantly opposed to the use of DDT for the control of forest insects have a blind faith in the so-called balance of nature. They believe that DDT sprays should never be used, because they destroy all biological-control agents and thus perpetuate insect outbreaks. These assertions have not been substantiated by scientific studies. Some stages of beneficial insects exposed directly to the spray are killed, but at the same time other species are in resting stages or concealed so as not to be exposed.

Field studies made in connection with the widespread spraying of DDT for the control of the spruce budworm, the Douglasfir tussock moth, and the gypsy moth all showed that many parasites and predators survived the sprayings. Actually, many beneficial species missed by the spray were able to continue their good work in cleaning up spot infestations of destructive pests also missed by the spray.

Need for continued research on effects of widespread spraying.—In view of the large stakes involved in saving our forests from destructive pests through aerial spraying with insecticides, research studies on the over-all effects of such sprays on fish and wildlife and other values should be continued and supported on a sustained basis. The varying ecological conditions encountered in forests, including the diverse nature of streams and lakes, make it especially desirable to conduct basic studies and to make careful field evaluations in order to develop better ways to avoid or minimize damage.

There is great need for the team approach — entomologists, fishery biologists, wildlife specialists, chemists, and others—to study these complex problems on experimental areas treated precisely as in a control or eradication program. These areas should be large enough so that the full impact of the treatments can be measured, and the studies should be continued over a period of years so that any delayed effects of the insecticide can be properly evaluated. The presence of pastures and crop lands adjacent to forest tracts means that spray operations must be conducted in such a manner as to prevent their contamination, particularly if the insecticide is one for which a tolerance has not been established in milk and meat of domestic animals.

Thus far, in view of its over-all effectiveness and safety, DDT has been used almost exclusively for control of defoliating forest insects. At a dosage of one pound per acre it has saved millions of acres of forests. However, in very large outbreaks, such as the spruce budworm in Canada, it appears necessary to make retreatments in some areas. Unless the total dosage can be kept to this limit, there is a chance of damage to fish. Since there are situations where it would be highly desirable to use a less toxic material than DDT, screening of new insecticides must be continued in an effort to find some that will be less hazardous.

Need for improved operational procedures.—Further research is also needed to improve operational procedures in making aerial spray treatments over large forest areas. Today most large-scale spraying operations are carried out by contractors, and payment is made on the basis of completed acres. To assure proper coverage and that pilots fly the boundaries established by those in charge of the program, either there should be ground-to-plane communication or patrol planes should follow spray planes to advise pilots as they spray. Since aquatic organisms are sensitive to DDT poisoning, the direct treatment of lakes and rivers should be avoided, if possible. In order to prevent the hazard of double coverage, streams should never be used as boundaries of spray areas. Whenever practicable, small planes should be used to treat forests around lakes and streams, and only when the wind velocity is low. Whenever possible, headwaters should be treated last so that aquatic insects and fish will be available to serve as a repopulation source in the event the initial sprays destroy them. Further research undoubtedly will lead to additional recommendations to minimize fish and wildlife losses. Someone should write a manual to cover the many problems that arise in connection with a large-scale aerial spray program. The best procedures known on the basis of broad field experience should be given as a guide for the conduct of effective and safe programs.

Public relations and forest-insect spraying.—Since almost every person in this country has an interest in the beauty, use, and preservation of forests, it behooves entomologists and others to advise the public of the need for and objectives of an insect-control program before it is undertaken. There should also be ad-

vance warning of the time the spray operations will begin and of any precautions that the public should take. When such matters are clearly understood, land owners, wildlife organizations, and municipalities will usually cooperate and assist in the program.

Of course, there will always be a minority who will oppose the use of insecticides. This situation was encountered in 1957 in connection with gypsy moth spraying in New York, when 14 plaintiffs from Long Island sued the Secretary of the U. S. Department of Agriculture and the State Commissioner of Agriculture and Markets in an effort to stop current spraying with DDT and to prevent future aerial spraying of their land with insecticides. A full hearing on the case was held in February, 1958, in the United States District Court at Brooklyn. The judge rendered his decision late in June, 1958 and did not grant the injunction sought by the plaintiffs. Though the original case related to DDT and the gypsy moth, it soon became evident that all other insecticides were also on trial, and a great issue was made of the effects of insecticides, particularly DDT, on human health, fish and wildlife, bees, biological control agents, plants, and soil. Most of the plaintiffs were reluctant to acknowledge the many outstanding benefits from the use of insecticides.

It seems to me that entomologists have a definite responsibility to inform the public of the sound biological reasons why insect control or eradication programs are undertaken. These programs must offer the greatest good to the most people. We should continue to elicit the help of our fellow scientists to meet emergencies as they arise, whether in court or debate, and stand up and be counted when our expert opinions based on sound studies, recommendations, and programs are challenged by those who do not have the background to evaluate them properly. It is gratifying to note that some conservation groups are aware of the need for chemical control of insects to preserve our forests and the associated wildlife habitats. They did not participate in the so-called gypsy moth case, but instead are taking the positive approach of seeking support for additional research to develop procedures that will minimize damage to wildlife. Some private organizations are planning to provide financial assistance for limited studies. However, it is generally recognized that a large and intensive program with skilled personnel is required to obtain needed basic information and also a proper evaluation of the effects of sprays on animals, soils, and vegetation in large treated areas under varied conditions. Specialists and modern techniques and equipment will be needed to determine the true effects of such sprayings on both short and long-term bases.

Summary. — The discovery that DDT applied from airplanes at the rate of one pound per acre will control several important defoliating forest insects has meant much to our economy and also to the public interested in the many multiple uses of our forests. Research has shown that this amount of DDT ordinarily causes only a temporary effect on the forest fauna, whereas uncontrolled forest pests and consequent fire result in serious losses of both present and potential timber, almost total destruction of fish and wildlife and their food supply, and permanent damage to wildlife habitats. Limited direct losses of fish and

substantial losses of fish-food organisms attributable to DDT have occurred under certain conditions. Some mortality of fish may be due to lack of insect food and to the delayed effects of DDT accumulated in streams. Additional basic research and field investigations are needed to evaluate the effects of widespread forest sprayings in different ecological habitats and to develop better methods of overcoming any residue hazards to fish, wildlife, soil or crops. All insect control and eradication programs must be on a sound biological basis. They should be thoroughly explained to the public. The benefits from the judicious use of insecticides have greatly exceeded any harmful side effects. DDT has provided outstanding control of several forest insects. Let's not lose the use of this powerful weapon through default.

National Outdoor Recreation Resources Review Commission

(From page 18)

nues from these areas in the form of hunting or fishing licenses and camping permits. Therefore, these agencies should provide necessary sanitary facilities and not look to the federal government for additional handouts.

Public domain lands primarily suited to recreation can be obtained by state or local agencies under lease or by transfer of title under the Recreation and Public Purposes Act. If funds are not available for purchase, they can request BLM to reserve desired areas for future acquisition.

Unfortunately, few states have shown any initiative in planning for future recreation needs. Consequently many desirable public lands are being reclassified and disposed of for other purposes.

The responsibility of private landowners to provide hunting, camping and picnic facilities for the public is of special significance in populated areas where federal and state landownership is small. In some sections of the country questions have been raised over the right of private landowners to remove den trees in cultural operations or to conduct hardwood control measures. Sportsmen point out that game animals are the property of the state. Landowners, however, must retain the right to make a living from their own property.

Alaska

Statehood for Alaska presents a tremendous challenge in resource management. What will the new state do with the 103 million acres of public domain granted to it? How will these lands be protected? What provisions will be made for state parks and forests?

Several years ago the National Park Service made a territorial survey to determine areas of park quality. But Alaskans have shown little interest. Theirs is still a pioneer economy with wilderness just beyond the city limits.

Some authorities feel that commercial fishing interests and the outfitters of hunting parties in Alaska are more inclined to exploitation than wise use of fish and game. Certainly many pressures are developing in the new state, and some impartial advice would be helpful.

National Parks

Many years ago interest in national parks was fostered by a few dedicated people who induced the public to visit and enjoy nature's gifts. People came and keep coming in an ever-increasing horde. Last year 1,600,000 of them visited Yellowstone. Maybe it would be better to say most of them drove through it. Soon it may be necessary to designate one-way roads for hurrying autoists.

Should the numbers be regulated in some manner? The Park Service has adopted a policy of accommodations for all and is trying to provide needed facilities in its Mission 66 program. Yet it seems there may come a time when the pressure of people will be too great.

Perhaps this eventuality could be avoided by extensive recreational developments in the East. This would enable many people to make better use of their leisure and reap some benefit from it.

As it is, many eastern motorists drive long days to reach western forests and parks, then only have time for a fleeting glimpse before rushing back. Returning to the office often is a welcome relief. If recreation is to be of therapeutic value to such people, the facilities must be close enough to the centers of population to permit leisurely enjoyment.

Why not develop the scenic potential of the Appalachian and Allegheny Mountains? Such an expansion of recreation might provide an economic stimulant far greater than any market for scrub-hardwoods could produce.

A major road-block to park development in the East arises from private ownership of most of the land. Furthermore, public agencies should not be expected to foot the entire bill. Many concessionaires gain a livelihood from public parks and in effect are subsidized. Plans should be devised for more recreational developments under private enterprise.

Public Access to Water

Providing public access to lakes and streams is a matter of increasing importance to a great many fishermen, boating enthusiasts, and others.

A recent survey by Sport Fishing Institute disclosed that Michigan and New York are far ahead of other states in this program. Michigan has acquired nearly 700 sites, about two-thirds of them being lake access sites. Many of these tracts have been acquired with funds derived from the sale of fishing licenses.

At lakes where camping is permitted, the average-size access area is about 56 acres with 1040 feet of water frontage. At other sites the average size is five acres with 436 feet of lake frontage.

In New York state, Maurice Otis, supervisor of stream improvement, attempted to calculate the minimum area of a water access site. He concluded that a site should contain at least one acre of land exclusive of approach roads. This would provide parking space for 40 cars and boat trailers. Areas to be used by campers must be larger and equipped with sanitary facilities.

Over-use of Michigan facilities, much of it by non-fishermen, indicates that the number and size of access sites should be expanded greatly. Furthermore, fishing license sales indicate the sport is growing twice as fast as population growth. Sport Fishing Institute suggests "at least 10 acres per access site . . . and . . . at least one such site per 300 acres of lake or reservoir water serviced." If camping is permitted, the average tract acquired might be 100 acres.

Providing access to ocean beaches also is a matter of much concern. Only six percent of the Atlantic coast line is open to the general

public. However, Oregon owns all of its Pacific Ocean frontage.

Zoning Recreational Uses

Since World War II there has been a tremendous increase in boating and water skiing, often times to the distress of swimmers and fishermen. In some states, particularly Minnesota, county officials have zoned some lakes with special areas set aside for specific uses.

Thought also should be given to restricting the type of structure to be built along lakes or streams and specifying the distance such construction must be from water.

Zoning also needs to be applied to large forested areas, so that tin-can campers do not encroach upon esthetic values.

Conflicts in Resource Use

Under a banner headline, "Fish Vanish from Little Smoky as Depleted Range Ruins Fine Stream," the *Times-News* of Twin Falls, Idaho delivered itself of a few choice comments on July 6, 1958.

The paper then went on to pinpoint how over-use of the range by livestock in some areas and an excessive number of elk in others had resulted in flash floods. These floods undermined stream banks, filled the creeks with silt, and generally ruined fish habitat.

The same effects have resulted elsewhere from logging, mining and road construction.

Such conflicts can be ironed out when they occur within large acreages under a single ownership, either private or public. But correlation of resource use becomes difficult when many different landowners are involved. In such instances cooperation must be brought about through education.

Education in wise conservation and resource use could be one of the major studies of the new outdoor recreation commission.

Recreation on Reservoirs and Flowage Areas

Development of recreational policies for areas under the jurisdiction of the Bureau of Reclamation and the Army Engineers are additional fields of fruitful effort for the outdoor recreation commission. Reclamation projects now impound more than 1.3 million acres of water area.

Although the law governing development of a reclamation project does not permit acquisition of land beyond essential needs, it has been the practice to acquire a 300-foot

horizontal strip beyond normal pool elevations. Sometimes project authorizations also provide for the acquisition of additional lands for recreational purposes.

This year Congress appropriated $750,000 for initiation of a new recreation program by the U. S. Army, Corps of Engineers. The money is being used to construct access roads, parking areas, boat launching ramps, picnic, camping and sanitary facilities.

These policies can be viewed from several directions. It certainly is short-sighted to impound a large body of water and not take into account its possibilities for fishing, boating and other recreational activities. At the same time, it would be lamentable if the values of recreation and wildlife are used to justify an otherwise uneconomical project. Judging by the mail received from worried landowners, some of these reservoirs seem to have been constructed without regard to the loss of valuable timberlands or the impact upon adjacent forest areas.

Effect of Insecticides Upon Fish and Game

Within the past two years there has been much concern about the effect of gypsy moth and fire ant control programs upon wildlife. Some complaints resulted in court action.

The result of this agitation has been a $125,000 appropriation by Congress to study the effects of various chemicals upon fish and game. Some observers now estimate that $25 million will be needed for this research during the next decade.

At first glance such a program has the earmarks of going overboard for protection of a single resource at a time when the primary problem is how to control organisms that may destroy the entire forest community.

Here again, coordination between various agencies is important.

Water Power Developments vs. Fishing and Scenic Resources

A comprehensive analysis of future water power requirements and the manner in which they can be obtained with the least impact upon other resources would be of tremendous value to layman and politician alike. As it is, there are so many divergent interests pulling and hauling over various dam sites that the casual observer is completely baffled.

Operating Recreational Areas on a Sustained Yield Basis

Dr. Marion Clawson, speaking before the New York Section, Society of American Foresters, said:

"By and large, we have inherited mature forests and other good recreation areas, and we have yet to demonstrate that we can manage them so as to preserve or replenish their recreation productivity . . . I think there are many serious technical problems yet unsolved on management of recreation areas.

"How can we measure the productivity or capacity of recreation areas, and how can we increase it?" Dr. Clawson inquired. "Recreation areas, no less than grazing areas or forests, have a capacity which cannot be exceeded without detrimental effects upon the resource and upon its capacity to satisfy the wants of the people."

Summary

These are but a few of the problems, yet all of the foregoing remarks boil down to a plea for more research, more study, more thought. One sage observer summed up the feeling of many when he said, "I hope this outdoor recreation resource review does not become a mere county by county enumeration of camp sites and picnic tables. What we need is deep thought on some very complex problems."

Pesticides, Blessing or Curse?

(From page 5)

ingestion of contaminated food or water. Suggested census procedures may be obtained on request from the Patuxent Wildlife Research Refuge.

8. Chemical analysis of tissues. Specimens found dead on the study area may be prepared for analysis by freezing or by removing the digestive tract, liver, heart and brain and placing these tissues in 70 percent alcohol. Weight of the bird or animal and of the tissues should be obtained wherever possible. Frozen specimens should be packed in dry ice and sent to the laboratory by pre-paid air express. A limited number of analyses can be made at the Patuxent Research Refuge subject to prior arrangements before shipping samples. Specimens should be identified by species, date collected, symptoms observed, and history of pesticide applications.

Growing Threat to Wildlife

All data should be analyzed thoroughly in an attempt to arrive at the most logical explanation of the findings. The possibility that other factors might be responsible should never be overlooked.

All facts available at present indicate that the application of chemical pesticides for

the control of harmful insects will present a growing threat to wildlife within the near future, a threat that can be minimized only through intensive study of the problem by all agencies concerned and by close cooperation among these agencies at state, federal, and local levels. The problem already is urgent, and there should be no room for interdepartmental bickering or single-mindedness. Properly applied, the new pesticides present a potent weapon against undesirable insect pests. I firmly believe that with adequate facts and the development of harmonious working relationships between responsible governmental agencies, the objectives of the present programs can be achieved with minimum losses to desirable wildlife. In many instances, losses already reported might have been eliminated or minimized by the substitution of selective mixtures, alerting spraying patterns, and similar practices. Where such steps are impractical, the only recourse of the wildlife administrator is through legislative channels. The laws of too few states provide protection for wildlife against the indiscriminate use of potent chemicals.

In my judgment, the present uncontrolled distribution of exceedingly deadly poisons is a major threat to both aquatic and terrestrial wildlife, and perhaps to man himself. Certainly there should be more information on both the immediate and long-term effects of such toxicants, but there also should be much more rigid controls of its use than exist in most states.

If it is the duty of the agricultural agencies to do all they can to control pests harmful to the farmer, it is equally the duty of every fish and game agency to protect the resources under its control for the benefit of the general public.

Reading About Resources

(From page 27)

worthwhile. Finally, modern man will have to re-educate himself to changes in his diet as these new foods from the sea are introduced.

Indeed, the tasks are almost as great as the pressures of hunger itself. And if Dr. Walford has made any significant error, it lies in understating his hopes for research and expansion. He writes, in conclusion, of the need for new scientists and for marine laboratories in areas where there are now no fisheries. He appeals for perseverance in the basics of the science, to supply that fundamental knowledge without which intelligent application is impossible.

Yet, realizing as only a man of his experience could the immensities of the task, and the inevitable discouragements involved in attaining the release of the millions of dollars which would be required to do the job properly, Dr. Walford hedges on his concluding appeal. He stops short of the all-out call to battle against our ignorance of the sea, which the challenge of the sea itself demands.

Living Resources of the Sea shows modern man his last unexplored opportunity to turn the tide of starvation. It outlines a task as costly as, and as important as, the development of nuclear energy for peacetime use. Most books are meant only to be read; this is one meant to be acted upon with all the energy of which we are capable.

NEW AND TO NOTE

The World in Your Garden, by Wendell H. Camp, Victor R. Boswell, and John R. Magness. Paintings by Else Bostelmann. National Geographic Society, Wash. 1957. 231 pp. $6.50.

A collection of essays, superbly illustrated, on the origins and social history of the "exotics" imported to our gardens from the four corners of earth. There is real romance in the life stories of many of these now-common plants.

Education for Planning, City, State, & Regional, by Harvey S. Perloff. Published for Resources for the Future, Inc., by The Johns Hopkins University Press, Baltimore. 1957. 189 pp. $3.50.

In the helter-skelter growth of community planning, "professionals" have come to their work with every shading of education from good to bad. Dr. Perloff examines this sometimes disheartening situation, and comes up with recommendations that make the good sense we have come to expect of him. His emphasis on a general, broad viewpoint is as pertinent in this specialty as in any other, and the book is a solid contribution—hopefully assuming it will be read by deans and educators.

Young People's Book of Science, edited by Glenn O. Blough. Whittlesey House, McGraw-Hill Book Co., N. Y. 1958. 446 pp. $4.50.

A survey for children of the wonders of modern science, this book not only contains many, many bits and pieces of information which we adults have never learned, but discusses them in a language we can understand. Recommended to be bought for Jr. and read by Daddy.

Who Will Lead

(From page 19)

where near equal to the need or the opportunities.

A survey by the U. S. Forest Service some ten years after CCC ended brought reports on 30 state or federal work camps using correctional institution labor. The reports came from state agencies in seven different states and federal camps in four other states. These camps averaged 56 workers per camp, 12 men per work crew, and 14 workers per guard. Two-thirds of the camps reported no guards were used or needed on work handled under technical foremen.

These crews worked an average of eight hours a day, five days a week, and the average round-trip transportation time was 50 minutes. The work included road and trail maintenance and construction, fire hazard reduction, tree nursery planting, building telephone lines, soil erosion and blister rust control, and timber stand improvement. In no case did it compete with or displace regular paid labor.

Workers' ages in these camps varied from 16 to 45 years; half of them were serving their first term in a correctional institution. Fifteen, or half, of the camps reported a total of 20 escapees, all of whom were recaptured. The remaining two camps reporting on this item stated that less than one percent escaped. Twenty-five camps—89 percent—were on an "honor" system while working, and all but one of the remaining camps had part of each work crew on an "honor" system.

Prison and conservation authorities reported both quality and quantity of the work surprisingly good. From a quality standpoint, a third (6) of the camps reporting rated work output superior to that of paid labor, while 61 percent more (11 camps) said their work was equal in quality to paid labor. A work output inferior to paid labor was reported by only one camp. As to quantity, camp reports indicated work output averaged better by 35 percent than output by CCC enrollees, and equalled 95 percent of the quantity output of paid labor.

What is the opinion of authorities and the public most closely associated with prison labor in conservation work? This is possibly the most interesting fact of the survey: not a single criticism from any source.

Prison authorities reported the work camps to be a "definite rehabilitation factor," and recommended "continued and increased operations." Conservation authorities included such observations as "wish

continued operations" and "very good."

Comments were requested as to public opinion concerning the camp projects. Not only was there an absence of criticism, but such favorable comments as "no difficulty any more," "generally accepted," and "good relations with public" appeared. One camp, after 18 years in the same locality, reported it was now accepted as a desirable community asset. One county was reported to have contributed $60,000 to finance conservation work by this labor when national forest camp ground improvement funds were no longer available.

A more up-to-date study is called for. But we don't need additional information to know that we have two serious, nationwide problems urgently needing attention, and that both may be solved, at least in part, by bringing them together.

On the one hand there is a vast volume of conservation work needed and waiting to be done on federal, state and other publicly-owned wildlands.

It includes, for example, planting trees, conserving soils, improving watersheds and building flood control projects, protecting forests from fire, insects, and disease.

On the other hand, while much of our natural resources still go to waste, growing numbers of our young people are going to waste too. Cities are getting bigger all the time. More and more young men are cooped up in crowded cities and in some rural areas with insufficient guidance, job opportunities, or constructive outlets for surplus energies. Their environment encourages them into lives of crime.

In these early years, before boys can see the road clearly into useful lives, they get lost. There is a tragic personal loss to the individual as well as a cumulative loss to the nation. When one young man gets caught in the web of crime, society not only loses a useful member but takes on the added risk and expense of confining him.

The answer to growing juvenile crime does not lie in coddling young criminals. Psychology and psychiatry, two young sciences, may have much to offer in this field when they further mature. Until better rules are tried and found useful, we can rely on one that has been proven. Part of the answer lies in firm guidance for the young and something for idle minds and hands to take hold of. Hard physical work amid the wholesome influences of nature — woods, fields, mountains, and streams — can work wonders in getting a mixed-up lad back on the track toward a useful and rewarding life.

In a program of this nature there should be room for boys who have not actually crossed the border into crime. For those needing outdoor work, leadership and guidance, perhaps a different category of camps would be in order.

These two national problems are being intensified by the fast-growing populations in the United States as well as the rest of the world. Sir Julian Huxley, distinguished biologist and man of letters, explored the subject in the September issue of *Horizon,* in an article titled, "Man's Challenge: The Use of the Earth."

Huxley said the most significant fact of this age was not atomic energy, but that "it is in the field . . . of human numbers, that man is facing his greatest challenge." His contention is that, "if the earth is to nourish its growing billions, in body and spirit, man must plan and preserve a harmonious relationship with nature. For the first time in history he has the power—and the urgent necessity—to develop the planet to meet the needs of the human race."

That problem is right on the doorstep of the United States. With 7,000 more people being added to our population every day—three million a year—how much longer will we be able to put off long-range planning and decisive action in the wise use and more intense conservation of our part of the earth's resources? The young man who has momentarily gone astray can help us toward that goal while finding himself.

Programs to accomplish this human rehabilitation and natural resource conservation will not come cheap or be immediately self-supporting. Initial costs will appear high. But the cost will be reasonable indeed if we look at it as an investment in people and essential natural resource—both intimately bound up with the future strength and well-being of the country.

Such a program is ultimately bound to pay a handsome profit in terms of richer lives, increased production, and taxable wealth. If handled right, it is almost equally bound to be popular. Americans are a generous people; they like to help others. Americans love their soil and the outdoors; they will protect these if adequately informed and led. So here in this proposed undertaking you have a double appeal—to the hu-

manitarian and the conservationist. You at once touch those who would save human beings and those who would save basic natural wealth.

Too often in the past a serious error has been made in the thinking on this subject. Some people believe such work camps should compete on a cost basis with paid labor camps. That attitude misses the point by at least 50 percent. We must keep in mind the two purposes, one as important as the other. Each camp must have as its goal the accomplishment of a successful human rehabilitation job as well as the assigned natural resource improvement. And the double mission will require a greater initial cost than if only one goal were in mind.

Something else besides financial outlay will be required to launch this great work. It will require leaders with persistence, determination, and willingness to contribute valuable time and effort.

Few people question either the need or the potential benefits. However, the program won't be easy to establish. An uphill struggle will be involved in getting the funds and facilities to begin. The tremendous values at stake are worth many times the struggle, however difficult.

The big question is: which individuals and groups will be willing and able to tackle the tough job of leading this worthy battle?

Man Vs. Ant

(From page 15)

with less serious inroads (as of the fall of 1958) in eastern Texas, western Florida, Tennessee, Arkansas, Georgia, South Carolina and North Carolina.

The fire ant attacks man and wildlife on several fronts. In the first place, the ant is a voracious feeder on agricultural crops of many kinds, as well as pastures and lawns. In some instances the insects build so many mounds (ant hills) on farm lands that it is impossible even to plow the terrain. Fire ants are devastating to all ground-nesting birds, and literally eat the young alive, as the parent birds seem helpless to combat them. The favorite method of attacking such birds is to swarm over the eggs just as they are hatching. If there are enough ants in one swarm, they devour the young chicks in a few moments. Mature penned quail are subject to the same deadly treatment as are their offspring. As far as outright killing of animals is

concerned, fire ants have been known to destroy young calves and pigs by the simple but horrible process of eating them alive. It is the understatement of the century to say that the fire ant is one of the most deadly insect pests to have attacked ten southern states in the past half century.

Arrayed against the fire ant is the U. S. Department of Agriculture, which has been designated to rid the country of the destructive little devils. The Agricultural Research Service of the Department is even now spraying infected farm lands and pastures in an effort to at least control if not get rid of fire ants. The U. S. Public Health Service has also entered the fray. Dr. H. Page Nicholson of the Atlanta office has been assigned the job of determining the effects of fire ant control on fish and aquatic life on southeastern waters.

The study of the effect of fire ant destruction, plus the effect of other pesticides used in controlling insects, is now being started by the U. S. Fish and Wildlife Service. The 85th Congress (1957-58) voted $125,000 to the U. S. Fish and Wildlife Service to get the program underway. This is only a starter, as it is going to take a lot more money to evolve a method of killing fire ants without slaughtering wildlife in tremendous numbers. Along with the federal bureaus mentioned, the state agricultural departments of the ten states affected are also in the fight, as well as the various game and fish departments and numerous county agricultural agents. Altogether a lot of talent is arrayed against the fire ant, and judging from reports studied from various parts of the country, as well as some first-hand observation, it is going to take concerted action to control the pest without decimating the wildlife resources over a large portion of our country.

The base of operations for studying the effect of pesticides upon wildlife is the Patuxent Research Refuge of the Fish and Wildlife Service, located at Laurel, Maryland, midway between Washington and Baltimore. An agreement went into effect between the service and the U. S. Department of Agriculture in December, 1957, whereby each government bureau apprises the other of its findings on wildlife destruction as a result of pesticides used in insect control.

A visit to the Patuxent Refuge late in the summer of 1958 disclosed some alarming factors in the present battle with the fire ant. For instance:

It has been learned that heptaclor is *15 times more toxic* than DDT fed to penned quail and pheasants on the refuge. Furthermore, dieldrin, another fire ant killer, is *at least 15 times more toxic* than DDT.

Reports that have come in from various parts of the country where the fire ant has become more than a mere pest are conflicting. In some instances, only minor damage to wildlife was reported. In other instances, high losses to bird, animal and fish life were cited. All reports were from areas which used one or more of the chemicals now recognized as an effective killer of fire ants.

Four separate reports came in from Decatur County, Georgia, two of which declared there was no damage to fish and wildlife in certain areas checked after aerial application with heptachlor. However, the other reports from the same county stated that the kill among quail, rabbits, songbirds, mice and other wildlife was very high. The last two reports stated that heptachlor was present in the bodies of all the dead animals and birds found.

In Hardin County, Texas, 1,400

PREVENT FOREST FIRES

FOLLOW THESE RULES

1. Hold your match 'till it's cold — then pinch it to make sure.
2. Crush out your cigarette, cigar, pipe ashes. Use an ash tray!
3. Drown your campfire, then stir and drown again.
4. Ask about the law before burning grass, brush, fence rows or trash.

acres were treated by aerial application of two pounds of heptachlor per acre on March 3, 1958. A study of the results of the spraying was made by the Texas Game and Fish Commission which showed that the quail population of the area dropped 77 percent after the spraying. Losses in other forms of wildlife and fish were also reported.

In Wilcox County, Alabama, 1,000 acres were treated with dieldrin and 2,500 got a dose of heptachlor. The report on these units was made by Dr. M. F. Baker, of the Alabama Cooperative Wildlife Research unit, and a staff of observers. Said Dr. Baker:

"Fourteen of 16 coveys of quail on treated land disappeared. A heavy mortality of ground-dwelling wildlife was also noted. These species included meadow larks, towhees, and cotton rats. In addition, two hawks, one barred owl, and one crow were found dead, and four fox cubs were killed in a den. There was also a heavy loss of frogs and fish in the treated areas. All dead specimens showed either dieldrin or heptachlor."

Observers from Louisiana State University reported on two areas totalling 700 acres in Arcadia Parish which were treated during March, 1958. A preliminary survey indicated a high mortality of all forms of wildlife, including mammals, birds, fish, crayfish and snakes.

These and other reports from various pest areas were forwarded to the Patuxent Wildlife Refuge. These reports are being studied by Fish and Wildlife scientists, who in turn are cooperating with the Department of Agriculture in an effort to establish some method of combatting the fire ant without killing wildlife in wholesale numbers.

The opinion of state directors of fish and game commissions in the areas affected was recently summed up by A. D. Aldrich, director of the Florida Game and Fresh Water Fish Commission. Says director Aldrich (who was elected in the fall of 1958 as president of the International Association of Game and Fish Commissioners):

"The Florida Commission does not approve of widespread aerial or ground applications of super-insecticides for control of the imported fire ants and similar pests until adequate research data has been compiled. We know that such chemical poisons (dieldrin and heptachlor), if improperly used, are dangerous to many forms of life, including earthworms, insects, fish, rabbits, quail and deer, as well as fire ants. *We also know that such poisons may stay in the ground as long as three years.* Conservationists in the southeastern states are alarmed over the proposed aerial blanket spraying of such poisons to eradicate fire ants which have spread to an estimated 27 million acres in 10 states since 1918."

The italicized sentence of Mr. Aldrich's statement has grave undertones. If heptachlor and dieldrin actually stay in the ground for three years, what will the effect of widespread spraying be on human beings? It is not beyond possibility that man may become the victim of heptachlor and dieldrin poisoning by eating crops grown on sprayed land, or consuming stock that has been pastured on areas that have been subject to mass spraying. It certainly is something to think about.

The ironical part of the entire fire ant setup is the unhappy fact that the presence of these pests was known more than 25 years ago. Herbert L. Stoddard, Director of the Cooperative Quail Studies Association from the Sherwood Plantation of Thomasville, Ga., first called national attention to the problem in his annual report of 1931-32.

Mr. Stoddard had previously worked on quail in the same southeastern states from 1924 to 1929. He called attention to the problem presented by the fire ant and asked for help from the U. S. Bureau of Entomology in an attempt to stamp out this menace. Unfortunately, little attention was given his repeated recommendations, as well as those of other wildlife research workers in southern states during the intervening years.

Mr. Stoddard has said the effective control and possible eradication of the fire ant could have been accomplished 26 years ago if prompt action had been taken at that time.

Altogether, the fire ant situation of today is frustrating. By the same token, this is a frustrating article to write.

I have recently visited several of the southeastern states where the pest is in evidence. Everywhere I went (the Carolinas, Georgia and western Florida), sportsmen's groups and state wildlife authorities were of the same opinion: "Don't indulge in mass spraying until more studies on the effect of such spraying have been made."

To paraphrase a World War II

saying, it seems to be a case of "too much, too late."

Man now knows how to kill the fire ant. Applying hindsight, he should have started control methods 26 years ago. If he had done this, it is safe to assume that 27 million acres would not be in danger now.

As the situation shapes up today, it seems to be a case of "make haste slowly." There is too much at stake in the form of wildlife resources to risk their decimation while killing fire ants.

The future of millions of game birds and animals rests on precisely what methods are going to be used to kill fire ants.

Let us hope the Department of Agriculture, the Fish and Wildlife Service, the U. S. Department of Health, and the various state game commissions come up with the right answers.

Howard Hopkins

(From page 19)

ect, 1943-47. Of this work, Senator Stennis said, "His leadership helped to make it possible for our boys to get the lumber and paper and other forest products they needed to win the war. He helped keep the axes and saws going and the mills operating here at home."

Engaged in forest management work in the Forest Service chief's office during much of the CCC period, Hopkins worked closely with all phases of this program. As assistant chief for the past 10 years, he has done inspection work in all parts of the nation, where he was able to review on-the-ground conservation results of the CCC.

Continuing, Senator Stennis said in part, "As a member of the National Forest Reservation Commission, which passes upon national forest land purchase and exchange programs, I have had the pleasure of working closely with Howard Hopkins for many years. Mr. Hopkins has carried out this work with splendid competence, rare imagination, the highest integrity, and a resolute dedication to the public good. . . . The national forests are better public properties, and the American people have a finer heritage, because of Howard Hopkins's career of public service. . ."

Foresters in Uniform

(From page 23)

parks and monuments, the park ranger in his handsome, serviceable uniform is a symbol of guardianship of America's outdoor treasures. In passing, it may be said that few federal servants have earned for themselves and for their employing bureau the respect and affection of the public as has the park ranger in his garb of green.

Over the years various states have adopted forestry uniforms, principally for their law enforcement officers and forest protection personnel. In

most cases the forest officers receive allowances for the purchase of the clothing, but one state—North Carolina — actually purchases the uniforms, which remain the property of the state. The latest state to adopt a uniform is Oregon, whose Board of Forestry authorized one as of last March 1.

Scientific forestry had its origins in western Europe during the latter half of the 19th century. Because of the influence of the military on many aspects of officialdom, it is believed that several nations had forestry uniforms during this period. But it is uncertain as to whether France, Germany, or one of the Scandinavian nations was first. In any case, the wearing of forestry uniforms in Europe long antedated the custom in America. They are picturesque, and clearly reveal their military heritage.

As the accompanying illustrations show, the American forestry uniform, whether of a federal or state agency, is characterized by a certain informality as compared with the uniforms of European nations. Americans decorate their uniforms with fewer insignia than Europeans. The military influence in current American uniforms is so slight as to be practically nonexistent, whereas in Europe, especially in the dress uniforms of foresters, the military tradition is obvious.

Spruce Gumming in New England

(From page 29)

state, it is then passed through several metal and cloth screens. If the gum is too hard, one to one-and-one-half percent chicle is added to soften it to the desired consistency. Then it is poured out on a slab, marked, divided, wrapped, and packaged as in the old-time method.

The American Indian used spruce gum as a saliva producer to moisten his throat on long marches. The gum has long been known as a scurvy preventative, and is also popular among diabetics because it does not contain sugar. Undernourished children in an isolated mountain community were observed chewing young spruce twigs. Spruce beer was popular in rural New England communities a couple of generations ago.

Recently a Canadian hunter brought in a bear that he had shot. This animal had been shot through the body a short time previous, but the bullet had not struck a vital part. The bear, strangely enough, had applied first aid to stop the bleeding by coating each wound with spruce gum. This forest remedy had dried black and hard, and the wounds had healed perfectly without infection.

As a boy, the author of this article used to visit a large scarred spruce tree, pry off lumps of the translucent gum, and chew the sticky mass until it turned a luscious, purplish-red color, the shade of black raspberry ice cream. The flavor of this gum was unique—woody, spicy, aromatic, and pungent. As a New Englander tersely expressed it:

"The spruce gum chewing habit isn't for the general public. If you like the woody taste of spruce—if you like the firm feel of the spruce gum between your teeth—you'll like spruce gum. If you don't, perhaps you had better chew chicle."

SPRUCE BEER

(Century-old Remedy for Scurvy)

When ten gallons of water, six pounds of molasses, and three ounces of bruised ginger have been boiled together for half an hour, two pounds of the outer sprigs of the spruce-fir are to be added and boiled for five minutes; the whole is then to be strained through a hair sieve, and when milk-warm put into the cask, and a teacup of good yeast stirred well into it. When it has fermented a day or two, it is to be bunged up, and the following day bottled. It will be fit for use in a week. The ginger is sometimes omitted, and instead of spruce-fir, three ounces of the essence may be used, which is to be well whisked together with the molasses and a gallon or two of warm water; then put into the cask, which is to be filled with water and the yeast added.

SPRUCE BEER

(Modern Recipe)

1 gallon boiling water
¾ teaspoon oil of spruce
¾ teaspoon oil of sassafras
¾ teaspoon oil of wintergreen
4 gallons cold water
3 pints molasses
2 cakes compressed yeast

Pour the boiling water over the oils of spruce, sassafras and wintergreen. Add the cold water, molasses, and yeast cakes. Let stand for two days before using. Ice before serving.

25 For TVA

(From page 26)

ment. In this analysis of over 500 case demonstrations, we tried to determine basic factors in the success or failure of woodland owners to manage their woodlands. The results should prove helpful to those who are interested in setting up management demonstrations on small woodlands.

Since the second World War, at least 82 forest properties in the valley, totalling over 1,300,000 acres, have been acquired for management purposes. We feel that the technical information available from many of the demonstrations, along with improved marketing conditions, has been an important factor in bringing this about.

Another good indication of progress is the number of consulting foresters operating in the valley. A short time ago foresters and public agencies had difficulty in persuading owners to accept free advice on management. Now at least 15 consulting firms are operating in the valley. We have encouraged and recommended the use of consultants, and have worked out a model long-term management consulting contract in collaboration with a consulting firm.

The reforestation phase of our work was started in the early years through the CCC program. We operate two nurseries. Production this year was 46 million trees, 23 million for planting in the valley and 23 million produced under contract for other agencies, including the Soil Bank program. Total production to date exceeds 428 million seedlings.

For many years, TVA seedlings were distributed free of charge. Starting last year, however, they are priced the same as state-produced trees and are all distributed through the state foresters.

The valley still has 650,000 acres of critically eroding land and 770,000 acres of less serious erosion, in addition to a million acres of so-called woodland which needs reforesting. TVA has concentrated on reforesting the eroding lands because of their importance to watershed protection. Some 45,000 landowners have planted over 338 million TVA trees on about 298,000 acres. State-produced trees have been planted on an additional 77,000 acres.

State nurseries have greatly increased their capacity, but the demand continues to exceed supply.

We estimate that the 1,400,000 acres of open and eroding land are losing about 20 million tons of soil each year. This erosion can be stopped by reforestation, and the planted trees can yield forest products worth $40 million per year over a 45-year period.

In the Tennessee Valley, the people who buy and harvest forest products have had as much or more influence on the future of forests and forestry as anyone else. There are between 4,000 and 5,000 of these industry operators, mostly sawmillers. Therefore, if they can be made to understand a few fundamentals of good forestry practices and apply them, they can make an important contribution to forest development.

The sawmills in the valley can be classified as commercial or noncommercial on the basis of production. Only about 30 percent fall in the commercial class, but they produce 80 percent of the lumber. The others work only a few days a year, daily production is low, and management is inefficient to say the least.

A survey of the commercial mills in 1950 and a resurvey in 1955 showed "lost" time at the average mill reduced from 120 to 93 minutes per eight-hour shift. The top 10 percent of the mills in 1955 lost only 24 minutes; over 25 percent lost less than 60 minutes.

Average mill-day production increased from 5,824 to 6,726 board feet. Man-day production went up from 968 to 1,123 board feet. Average annual production per mill increased from 688,000 to 822,000 board feet.

The decrease in nonproductive time over the five-year period meant an estimated wage savings of $500,000 to the industry. The increased production was valued at $8 million.

Stumpage buying habits changed too, indicating benefits to forest lands. In 1950, 49 of the sample mill operators bought stumpage by the boundary, seven bought selectively marked trees, and two cut to a diameter limit. In 1955, 37 bought by the boundary, 17 on a marked-tree basis, and seven by diameter limit.

The educational device found most effective with sawmill operators is the sawmill conference. These meetings at operating mills cover such subjects as cause and effect of lost time, log and lumber grading, lumber marketing, sawing methods, mill management, etc.

In our forest fertilizer work, we are trying to utilize TVA's concentration of technical manpower—chemists, agronomists, agricultural economists, and foresters—to get at some of the fundamental physical and economic questions involved in formulating and using fertilizers in forestry. Presently we are concentrating our efforts on two phases of this problem: (1) the possibilities of fertilization at or shortly after the time of planting, and (2) the stimulating of seed production on superior trees through fertilization.

Since the late thirties, TVA has been testing the small tributary watershed idea as an effective method of demonstrating over-all integrated resource development. Emphasis has been on water problems and state and local leadership. The Division of Forestry Relations, along with several other TVA divisions, has developed programs of research and demonstration in cooperation with state and local agencies.

One of the oldest forest influence research projects in this part of the country was started by TVA in White Hollow watershed in the early thirties. This 1,750-acre watershed in eastern Tennessee, now completely forested, is providing significant data on the effects of forest cover on hydrology and erosion. On another 88-acre experimental watershed, in Henderson County, Tennessee, foresters and hydraulic engineers are collaborating in a study of the effects of erosion control, reforestation, and timber management on the reduction of soil loss and water flows. On this watershed, before treatment, soil losses in the order of 24 tons per acre per year were recorded. After a four-year calibration period, erosion control measures were installed and the area planted. Within another five years soil loss had been reduced to 2.5 tons per acre per year, and more recent figures indicate that it is now less than one ton per acre per year.

In Parker Branch experimental watershed in western North Carolina, an area of about 1,000 acres including 45 farms, foresters are participating in a study to determine the effects of optimizing farm income on hydrology and erosion.

Results of our forestry work are recorded in some 360 technical reports, exclusive of annual reports. During 1957, we had requests for over 18,000 copies of these reports from 48 states.

On this silver anniversary of TVA we can feel some real satisfaction with forestry progress in the valley. But there is no room for complacency; the job ahead still looms large and challenging.

Some half-million acres of forest land still lack organized fire protection. About 15 percent of all forests are subject to grazing damage. An estimated 2.7 million acres are in need of reforestation. Timber production is only one-third what it could and should be. Watershed protection is still inadequate.

But we feel confident that the first 25 years will prove to be the hardest, and that the effects of past cooperative effort will speed up progress. The valley and the whole South are on the threshold of a forestry renaissance that will eventually establish this region as the Nation's prime source of forest products.

Crusading Texan

(From page 7)

other called "Why, What and How of Soil Conservation Districts." As national president, he originated the now famous "Tuesday Letter," a monthly publication that goes to 24,000 Soil Conservation District leaders, the press, and other outlets.

As an editor, Davis's style is terse and pungent with an occasional humorous twist. Legislators quickly developed a healthy respect for this publication that came blowing out of League City. Waters claims he has a crystal ball that tells him in ad-

vance what is coming in agriculture, and the truth is he has unveiled many Washington developments well ahead of anyone else.

As a crusader for the districts, Davis is almost a fanatic, and he has never ducked what he regarded as a necessary rough and tumble fight with legislators who did not see eye to eye with his young organization. As a consequence, he has been involved in some rare scraps with Democrats and Republicans alike in which he pulled no punches and asked no quarter. This has sometimes led to charges in the past that Waters is a very "uncompromising" individual.

While Davis's bluff, uncompromising stand on threats to soil conservation principles has earned him the reputation of being "very dogmatic" in some quarters, the truth is that he is a born cooperator, and nowhere has this been more pronounced than in his chairmanship of the Watershed Congress, which he helped to found and organize. Davis, like many other conservationists, sees a watershed as something indivisible from the forests in the highlands upstream, through the agricultural lands downstream to the cities, where live the people who profit most from wise land treatment measures.

To bring everybody into the act has long been the goal of the Watershed Congress, and last month in Dallas there was evidence that Davis's goals and those of the General Committee and all the sponsoring groups were beginning to crystallize. The fact that the young organization will move back to Washington for another big national meeting next spring is an indication of this growing sense of unity—the fact that the program is about ready to start working on a much broader canvas.

Consider the matter of land and water policy. Practically every major conservation organization in the country admits such a policy is needed, but agreement has never been reached on how to achieve it. At Dallas, two big representative committees presented their views on this subject, and the surprising thing is not that they did not completely agree, but that they found so little to disagree about.

Pointing to 22 specific examples of water conflicts in federal agencies alone, Lloyd E. Partain, vice president of The American Forestry Association, and Matt Triggs, of the American Farm Bureau, declared that two significant developments conceivably would be required to really straighten out the maze of conflicts, duplications of effort, and overlapping of authority. One is "an aroused and vigorous public sentiment." The other would be "a President with the courage and force to challenge the entrenched powers and vested interests which seem to perpetuate the present situation, and really to fight for a sound long-range policy."

"Perhaps we should acknowledge," Partain added somewhat drily, "that such action on the part of the latter without very strong support of the former would be political suicide."

In the absence of any apparent "Bull Moose" on the presidential political horizon, what did the two committees think really might be done?

The cure proposed by the committee headed by Dr. Ira Gabrielson, of the Wildlife Management Institute, and Gordon Zimmerman, Washington representative of the Soil Conservation Districts, would be a board of review composed of "distinguished citizens" who would advise Congress on whether federal funds were being spent for the over-all benefit of the citizens. Such a board "would evaluate and coordinate all federal land and water programs, and would recommend a policy which would resolve or minimize conflicts arising among various users of water resources."

Partain's committee, on the other hand, raised the question as to whether a board of this nature would have sufficient power and authority to deal effectively "with entrenched agencies, and their Congressional alliances and vested interest support."

Partain and Triggs suggested instead a two-point solution for the immediate future: 1) creation of a federal-state commission for each major river watershed or area, with the over-all welfare in mind, and 2) creation of a national water resources commission, which would be a fact-finding body on projects proposed to Congress, which committee would make recommendations on proposed projects prior to their enactment into law rather than after enactment.

The trouble with this proposal, as Dr. Gabrielson saw it, is that all too often agencies involved with water control promote their own individual program without proper concern for the over-all welfare of an entire area. He stressed that no member of the agencies should be allowed to be a member of the board of review proposed by his committee.

Partain stressed that the right to water, whether acquired by an individual, industry, or municipality, is a property right and is acquired under state law. If the federal government must have water for such purposes as defense or other pressing purposes, it has the power of eminent domain, but should reimburse the property owner "in identically the same manner as when it acquires land."

One point on which both committees fully concurred is that the public must become more aware of a need for better water programs and policies before the hodge-podge and conflicts now existing can be eliminated. Progress has been slow in this respect, but nevertheless progress is being made. One clue is the fact that individual sponsors of the Watershed Congress are showing an increasing willingness to forego previous "special interest" type demands in the interests of eliminating the present piecemeal approach. Water, in the final analysis, will be the great unifier of conservation interests, many people believe. At the conclusion of the recent congress, some observers thought that a national water policy to which all conservation groups could fully subscribe is not far distant.

A committee on "Maximum Benefits in Watershed Development" was headed by Irving K. Fox, of Resources for the Future. Mr. Fox's committee, like that of Dr. Gabrielson, recommended establishment of a board of review. Committee members did not agree entirely on whether this board should be advisory to Congress or work directly under the President in the executive office. Strengthening of state and local watershed activity was also urged by this committee, with some suggesting that states assume the responsibility for continued operation and maintenance of projects constructed under Public Law 566.

The Fox committee also made five specific recommendations that might strengthen existing practices. These are: 1) that the opportunities for multiple purpose development be fully exploited; 2) that greater emphasis be given to outdoor recreation values in watershed programs, including the propagation of fish and game and development of recreational facilities. More research on these subjects was urged, and it was suggested that the National Outdoor Recreation Resources Review Commission should fully inquire into the

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Members of the Association are entitled to a discount of 10% from the publishers price of books on forestry, conservation and related subjects. We offer only a partial listing of such books and you are invited to order others on the same subjects, whether listed or not.

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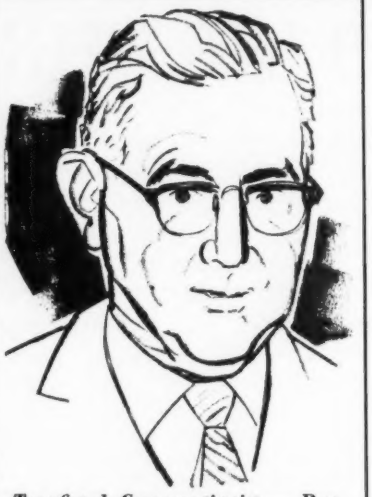
possibilities inherent in watershed programs; 3) that more attention be given to the preservation of the resource base for future generations; 4) that flood management programs of public agencies still place too much emphasis upon structural measures and give "relatively little attention to other possibilities of minimizing flood damages," including programs designed to promote insoak storage on upstream lands and thus control runoff, storage in upstream reservoirs, and the zoning of public acquisition of flood plain areas; and 5) that all costs of government-sponsored or financed drainage programs, including the unmeasurable non-monetary costs, should be considered in appraising the desirability of any given program. "Drainage can have a serious negative impact upon ground water levels and fish and game habitat," the committee stressed, "and unfortunately, these factors have not always been thoroughly considered in the design of drainage programs."

Finally, the Fox committee reported its belief that federal subsidies for flood control programs are greater than desirable. The committee further expressed the belief that "the present trend toward increased subsidies for irrigation is unfortunate" and represents an unfortunate trend away from previous reclamation programs.

Ollie E. Fink, of Friends of the Land, presented a committee report stressing the stake of cities in watershed programs. "A developed watershed which assures adequate supplies of potable water and freedom from the threat of flood and disaster is as much a part of the city as are its people, buildings and streets," Mr. Fink stressed. How to energize urban people into taking a more active interest in the watersheds of which they are integral parts has long been one of the big problems faced by the Watershed Congress.

Of interest to foresters was the fact that Mr. Fink first injected the so-called "tin roof" system of land management into the Dallas meeting when he said the future would see a more widespread use of shallow-rooted plants to insure more water runoff, as opposed to plants of the deep-rooted variety. This statement was challenged by Robert Struble of the Brandywine Valley Association of Pennsylvania and Delaware. What happens to the runoff, he asked, when the root systems of such plants as alfalfa and trees decay, thereby creating channels deeper into the earth's surface? Extreme caution should be the watchword in pressing for any program of this type, he stressed.



Two-fisted Conservationist **— Rep. Tom Steed told the Fifth Watershed Congress why his Fourth Oklahoma District is out in front on its small watersheds program. Big reason? His effective preaching**

"Tin roof" came in for more discussion in the panel headed by Col. Herbert B. Eagon and Russell G. Hill on "The Need for More Treatment on the Land." Col. Eagon and the committee took a rather middle-of-the-road position on the tin roof subject, but Joseph F. Arnold, director of the Arizona Watershed Program, in his statement, described how 700,000 acres have been given the tin roof treatment, chiefly by removing trees.

Earl Porter, of the International Paper Company, of Mobile, Alabama, also urged extreme caution in pressing for this type of land treatment. He cited that the pulp and paper industry, the fifth largest in the nation, makes a great contribution to both the cultural and physical needs of people. This industry depends on well-managed trees for its existence, he said. Any program that eliminates trees in a drastic manner, presumably to provide more water run-off, should be the subject of rigorous research that fully explores every avenue of the problem, he declared.

Col. Eagon stressed that each watershed must be considered separately, since the effects of land treatment on water behavior are complex and variable. No shotgun approach will suffice. "Many reasons for lack of progress have been recognized by your committee, in the failure to apply more treatment to the land, as opposed to more and more structures," the committee said. "These range from skepticism as to the value of land treatment measures — through lack of understanding, financial inability, and dependence upon outside help—to pure selfishness. . . "

The great need? More education, tailored to the watershed involved and backed by good publicity, Col. Eagon said.

A panel on the "Need for Clean Water" was chaired by Patrick Healy, Jr., of Washington, and co-chaired by Clayton M. Hoff, executive vice president of the Brandywine Valley Association. According to this committee's report, it is estimated that it would cost about 21.5 billion dollars to replace the existing sewer systems and sewage treatment works, of which about seven billion dollars would represent sewage treatment costs. To eliminate the backlog of needed projects and to care for new population and obsolescence in existing plants by the end of 1965 would require an annual expenditure of 575 million dollars. At the current rate of construction, the backlog of needs is not being met, the committee reported.

"The control of pollution should be approached in an orderly fashion," Healy stressed. "To do this, comprehensive programs should be developed, basin by basin, for the entire nation. Pollution may deleteriously effect water for the use for which other water resource projects are developed. Water quality may also be adversely affected by other projects by changing the regimen of streamflow and thus decreasing self-purification capacities of a stream. Therefore consideration of a stream pollution control should be considered as an integral part of all water resource development programs."

Existing needs can best be met in two ways, Healy continued. These are: 1) storage of excess water which would otherwise flow to the sea, unused; and, 2) prevention of new pollution and abatement of existing pollution so that the water can be re-used as it flows down its course. Perhaps more emphasis should be given to the possibilities inherent in the first of these—storage, Healy added.

The wrapup committee report at the convention was presented by Lavern Fischell, of Oklahoma, chair-

man, on the subject "Progress and Problems in Watershed Development." Mr. Fischell reported there are 54 active pilot watershed protection projects in 32 states in the fiscal year 1958. The installation of works of improvements has been completed in 23 projects, and nine other projects were more than 90 percent completed in June of this year. State conservationists have reported that state agencies have received about 1,200 applications for assistance under Public Law 566. As of August 1, the Washington office had received 900 applications covering 69,678,300 acres in 46 states and one territory. As of August 1, 366 watersheds covering 27,279,700 acres in 46 states and one territory had been authorized in planning. As of August 1, 123 watersheds covering 6,067,000 acres in 41 states had been authorized for assistance in the installation of works improvements.

While 42 fully-trained and adequately-staffed work plan parties are now capable of producing work plans equal to or in excess of the 100 new starts under Public Law 566 provided for in this year's budget, progress of upstream flood prevention development is plagued by a number of problems, Mr. Fischell said. Procurement of land easements and rights-of-way constitutes one major roadblock. In some cases, local sponsors have an adequate source of financing or a legal process by which to obtain financing required for their part of the installation and maintenance, but are fearful or hesitant to make use of it. Furthermore, more time is needed for the local people to work out the many attendant problems incident to the development of a watershed which usually occur after the planning.

A crying need on many of the projects, Mr. Fischell stressed, are capable, workmanlike educational programs designed to adequately inform all within the watershed as to benefits and problems which will be encountered in the development, and their responsibility. While easements are a problem, Mr. Fischell bore down heavily on the imperative need of making sure that "landowners in a watershed have a true understanding of what the program involves. An intensive educational program within each watershed is a *must*—a program to reach all groups, both rural and non-rural interests."

Other problems enumerated included: 1) development of multi-purpose projects, as there are groups interested in such matters as recreation, fish and wildlife, irrigation and other community benefits; 2) the amendment of many state laws to enable sponsors to meet P.L. 566 requirements; 3) the power of condemnation proceedings must be made available to local sponsoring groups; 4) the importance of having state governments assume more responsibility in assisting local groups.

"The progress that will be made in the future in our small watershed programs depends upon: 1) realization by local sponsoring groups and all the people of the watershed that the project is a local one which requires participation administratively, financially and otherwise; 2) the state and federal governments providing all the necessary 'tools' or assistance to meet the requirements of the local people which cannot be handled by them alone," Mr. Fischell concluded.

As Senator Roman L. Hruska, of Nebraska, and Rep. Tom Steed, of the Fourth Oklahoma Congressional District, stressed, the small watershed program is marching forward. As the convention wrapup committee further stressed, "interest and participation will increase as time goes on . . . although we must all recognize that it takes time to bring about complete understanding on anything."

Following the convention, the Congress General Committee, consisting of C. R. Gutermuth, acting chairman, Charles C. Butler, of the Farm Bureau, John H. Jones, of the American Watershed Council, Gordon Zimmerman, representing Mr. Davis, and James B. Craig, of The American Forestry Association, called League City to personally report to Chairman Waters Davis that the meeting was a success, that his good work was commencing to pay dividends, and that Washington next year will see the best Watershed Congress yet.

AFA MEMBERSHIP

Any person or company may become a member of The American Forestry Association upon application. There are five classes of Membership:

Subscribing, per year	$6
Subscribing, 2 years	10
Contributing, per year	10
Sustaining, per year	25
Life (for individuals) no further dues	150
Patron (for individuals) no further dues	1000

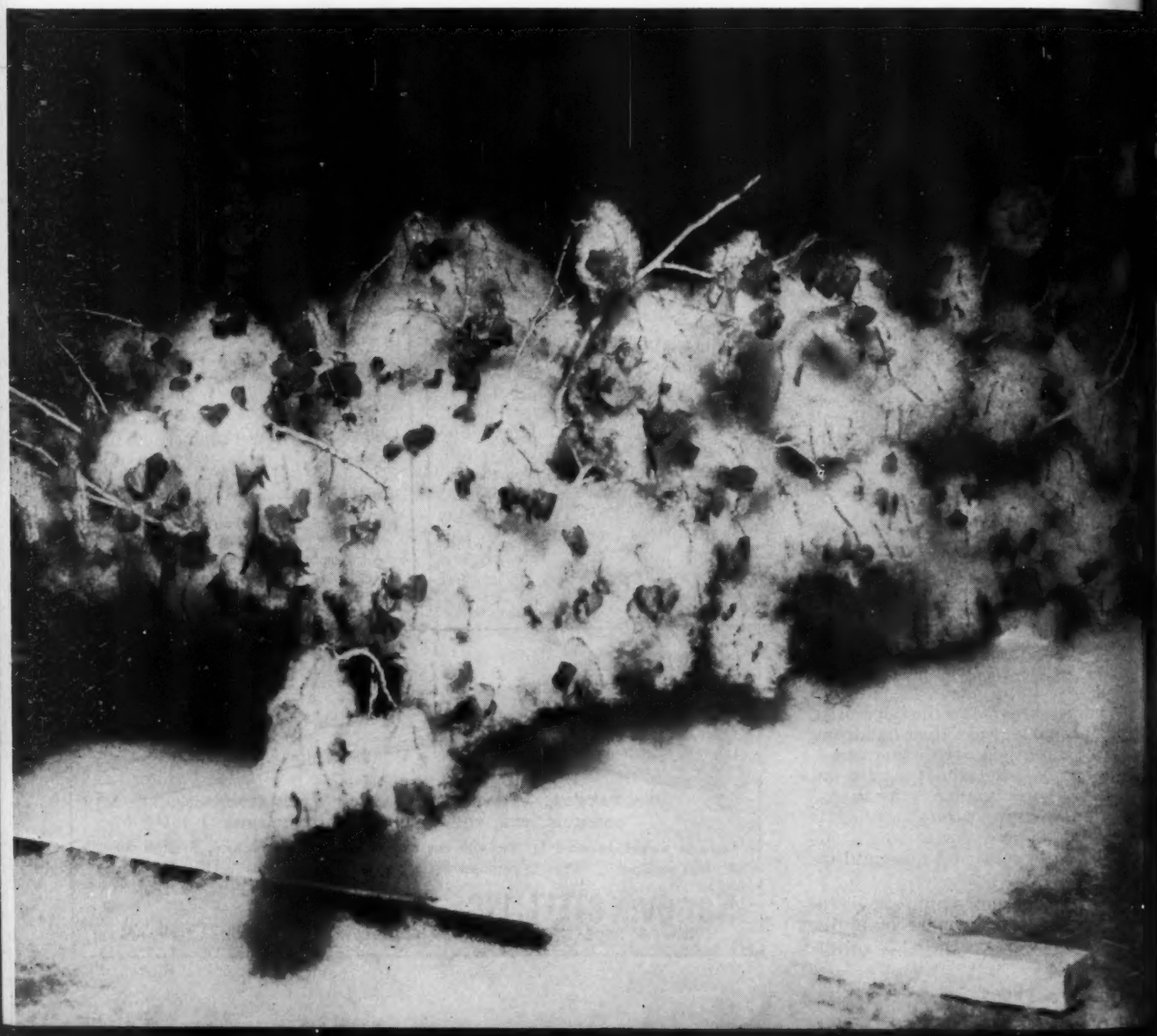
All members receive monthly copies of AMERICAN FORESTS Magazine.

Feature Photo of the Month

Photos used on this page will be of unusual rather than esthetic qualities and subject matter will be restricted to scenes, events, objects or persons related to the use, enjoyment or unique aspects of our renewable natural resources. For each picture selected AMERICAN FORESTS *will pay $10*

The seeding of quaking aspen (Populus tremuloides) is well known to many who recognize its downy, cottony quality. However, this photograph, taken at the Hopkins Memorial Experiment Forest in Massachusetts, reveals the large amount of seed an aspen produces.

Photo submitted by Ralph W. Marquis, Director, Northeastern Forest Experiment Station, Upper Darby, Pa



You can be in this money making picture with the new HOMELITE 7 21

That's right! The new Homelite 7-21 chain saw is designed to help you make more money, faster. Its big fuel tank lets you cut longer without refueling. Its balanced 21 pounds* means easier, safer handling in any location, any cutting position . . . lets you cut with less effort. The rugged gear drive delivers enough lugging power to fell trees up to 7 feet in diameter; speed to cut through 20" trees in 18 seconds.

A real professional's saw, the 7-21 has 7 magic features that mean greater dependability, longer life, less maintenance. These features include the famous Homelite high compression, short-stroke engine that delivers full power in any cutting position . . . automatic governor to maintain proper chain speed . . . large air filter to keep out sawdust, dirt and snow . . . simple piston pump oiling . . . tough, drop forged counterbalanced crankshaft to assure smooth running with less operator fatigue.

A full line of attachments is available. The plunge-cut bow — 14" and 18" — is ideal for cutting pulpwood . . . the brush cutter converts your 7-21 to a power scythe in minutes . . . the clearing bar makes the 7-21 a handy, fast-cutting clearing tool.

Get in the money making picture! Find out for yourself by seeing a free demonstration of the Homelite 7-21 chain saw at your nearby Homelite dealer's.

*less bar and chain

And the Homelite 7-21 is guaranteed for a full 7 months!

HOMELITE
A DIVISION OF TEXTRON INC.
4211 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

Manufacturers of carryable pumps, generators, chain saws, blowers.
In Canada: Terry Machinery Co., Ltd.

Find Your Homelite Dealer In The 'Yellow Pages'

NEW! Four-toothed Gyrodozer speeds clearing of stones, boulders, brush and trees!

HERE'S a revolutionary new concept in 'dozers—the steel-toothed Cat No. 7G Bulldozer. Developed by Caterpillar for faster production in tough going, the new Gyrodozer is proving its worth on job after job. This one, matched with a D7 Tractor, is doing clean-up work in the Cascade mountains in Washington. Bulldozing and ripping, it handles the job far faster than the 'dozer previously used for similar clearing.

The new Gyrodozer offers many advantages for forestry use, among them:

Selective combing action for removing rocks from mountain-road surfaces, leaving smaller material for a smoother roadbed.

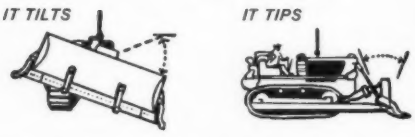
Deep digging action for prying out boulders, uprooting trees and general clearing applications.

Better 'dozing penetration in hard and frozen soils and stratified rock, since teeth penetrate these materials much easier than cutting edge.

For extremely tough jobs, the full horsepower of the tractor can be concentrated on one tooth. The teeth can be easily removed, so the machine can be used as a conventional bulldozer. For complete information about this new timesaving tool, see your Caterpillar Dealer. Ask for a demonstration. He'll put it through its paces for you any time, anywhere you say!

FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES

New bulldozer design "'dozes and rips"!



While the Gyrodozer's blade is like that of the Cat No. 7S Bulldozer, it has four heat-treated steel teeth spaced along the moldboard. They project 23" forward from the 'dozer cutting edge. Maximum tilt of the blade is 3' to either side. Blade may be tipped through an arc of 16½°. Tip and tilt movements are easily controlled. The operator never has to leave his seat to make a blade adjustment. The Gyrodozer is 'dozer and ripper in one!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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USE A GYRODOZER FOR FASTER PRODUCTION AT LOWER COST